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THE VETERINARY RECORD

The Journal of the British Veterinary Association

Patron: Her Majesty the Queen

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comprising:

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A Central Symposium: The Surgery of the Eye *

J. H. DOBREE; GORDON C. KNIGHT; R. H. SMYTHE

Principles of Cataract Surgery in the Human Subject

BY
J. H. DOBREE
Ophthalmic Surgeon, North Middlesex Hospital

MR. Dobree said it was fitting that one of the speakers in this symposium should be an ophthalmic surgeon as, in many respects, their approach was becoming more veterinary.

Owing to the ageing of the population an increasing number of cases came to operation each year, and operations in the eighth and ninth decade were now commonplace. Those most frequently performed were operations for cataract and glaucoma. The use of general anaesthesia was becoming increasingly frequent, and more attention was being paid to wound closure. The procedure for cataract extraction would be outlined. There were numerous individual variations but there were certain principles generally agreed on.

Pre-operative Preparation

One of the most important stages in the procedure in human subjects was the pre-operative preparation of the case. Many of the patients were old and had perhaps been living in a limited environment and seeing only relatives, the rent man, the milkman, and so on. The tendency was, therefore, to admit them to hospital several days before operations to enable them to get used to the new surroundings. It also enabled an assessment of the patient's general condition to be made and allowed some ideas to be formed as to their suitability for general or local anaesthesia. If it was found that the patient was disorientated or nervous the operation was done under a general anaesthetic. There were some disadvantages to general anaesthesia, particularly post-operative vomiting, but with drugs such as chlorpromazine this danger is reduced. In the pre-operative period a culture of conjunctiva was taken and, after the culture, cases were put on routine antibiotic drops. As the bacteria are liable to be penicillin-resistant, 0.5 per cent. guttae chloramphenicol at four-hourly intervals was frequently used.

If general anaesthesia was decided upon, patients had pre-operative omnipon and scopolamine, induction by pentothal, and maintained by gas and oxygen only. It was essential to have a good anaesthetist with special experience of this type of work.

If local anaesthesia was adopted, premedication given was usually phenobarbitone gr. 2 and 1 per cent. pantocaine at minute intervals for five minutes. Two per cent. homatropine and coccaine drops were used to dilate the pupil before operation, and guttae 1/1,000 adrenalin reduced bleeding from superficial vessels.

Some important points regarding instruments and sterilisation were stressed. It was impossible to do eye surgery with inferior instruments and some of the instruments which were absolutely essential, such as corneoscleral suture forceps, were costly. The best suture material was undoubtedly silk, and the finer it was the better.

The most effective method of sterilisation was by hot air. The cutting edges of instruments were preserved for far longer by this method than by any other. Hot-air ovens, which should be thermostatically controlled, are relatively cheap. Sterilisation is effected by keeping the oven at 150° C. for 30 minutes.

Operation for Cataract

The procedure adopted for a cataract operation was outlined. Firstly, the skin was cleansed and the lashes cut. The facial nerve was blocked with 2 per cent. procaine. The next step was the injection of procaine 2 per cent. and adrenalin retro-ocularly to

* Proceedings of a meeting held by the Central Veterinary Society on October 4th, 1956.

reduce the ocular tension. Next, the globe was immobilised with sutures; humans were normally operated on for cataract from above, so they wanted the patients looking down. This was best achieved by passing a suture round the superior rectus muscle. The use of sutures to keep the lids open was very common practice. It was an advantage to open the eye in two layers, first cutting the conjunctival flap and dissecting it to the limbus, and then incising the corneal scleral margin. This could be done in a number of ways, the classical method was with the Graefe knife, but the technique where the preliminary incision was made with the keratome and enlarged with scissors was often employed. A peripheral iridectomy was always performed to prevent iris prolapse, but the speaker understood that one was liable to produce haemorrhage if this were done on animals. The next step was the removal of the lens, which came out quite easily in the human. The total removal of the lens was preferable, but the subtotal removal, in which the capsule was left was, in some ways, the safer operation. At the end of the operation sufficient air was injected to fill the anterior chamber. This kept the iris well clear of the section for 24 hours and rendered adhesion unlikely. The wound was then sutured as a firm apposition of the wound edges is a decided advantage.

Post-operative Treatment

In the post-operative period the patient must be absolutely still for 48 hours; there is usually a double pad on the eye for 24 hours and then a single pad for four or five days. The patient is allowed up after three days, and the sutures are taken out after 10 days. The most common complication is hyphaema or haemorrhage in the anterior chamber, usually between the first and the fifth day; the treatment is usually conservative, the majority disappear rapidly but an anterior chamber washout might occasionally be necessary. Another complication is iris prolapse. This is treated by excision of the prolapse and resuturing. Another less frequent complication is infection, either immediate or delayed, and injections of penicillin sub-conjunctivally in doses of 50,000 units are used. Post-operative iritis is treated by local cortisone drops. Sympathetic ophthalmia is a very rare, but dreaded, complication as it might cause total blindness following an operation which would normally be successful in 95 per cent. of cases.

The Extraction of the Dislocated and the Cataractous Crystalline Lens of the Dog with the Object of Preserving Some Useful Vision

BY

GORDON C. KNIGHT

Royal Veterinary College, London

I HAVE listened to Mr. Dobree's very stimulating address with great interest and I should like to thank him very much. At the same time I must say I feel it is a privilege to have been asked to make a contribution to the Central Veterinary Society's opening meeting of this session, particularly as there are members and others present who could make a contribution on the subject of the eye with a lot more authority than myself.

As a veterinary surgeon whose work for some time has been mainly with small-animals, it is to be expected that a share of ophthalmic conditions should have come my way and, from time to time, there should be opportunities for me to venture into a little surgery. Thus, for what it may be worth, I have gained a little experience in lens extraction which, in dogs, appears to be almost the only need for intraocular surgery. I shall therefore attempt no more than to tell you something of my limited experiences in this field.

Indications for Lens Extraction

There are two indications for lens extraction in the dog—dislocation and cataract—and my reason for operating is the belief that this animal's eccentric type of vision can remain useful without the lens, providing the other ocular structures are functioning normally.

It is fairly common knowledge that certain breeds of dogs, particularly Wire Haired and Sealyham terriers and dogs which seem to have something of either or both in their make-up, are susceptible to dislocation of the crystalline lens. Occasionally the condition can be seen in dogs entirely unrelated to this type of terrier.

Sometimes the lens dislocation is mainly inferior and does not appear to cause much inconvenience, but much more commonly the direction is antero-inferior with the result that aqueous drainage is impaired and hypertension, or so-called hydrophthalmus, develops. In the majority of these cases it is my experience that loss of vision in the affected eye must be anticipated sooner or later; it can happen in only a matter of weeks or less. Furthermore, it is reasonably certain that both eyes eventually will be similarly affected, while sometimes both eyes may show the symptoms almost simultaneously.

I do not intend to discuss the causes of lens dislocation, but it seems that weakness of the zonular fibres is an important factor, apart from the day to day jolts and jars to which dogs are ordinarily liable. Furthermore, I believe this dislocation is a major risk in the existence of dogs of the types mentioned.

Recognition of the earliest signs of lens dislocation is important because, if extraction is to be successful, in most cases it must be done as soon as possible. Among the earliest symptoms I have observed are scleral congestion and some dilatation of the pupil with suppression of pupillary reflex. Careful naked eye examination may or may not reveal iridodonesis, but it is almost certain to be evident at some time in the near future.

Generally, in a very short period, the lens will have dislocated sufficiently to show, between its periphery and the periphery of the pupil, a crescent-shaped area commonly of bright green iridescence—namely the aphakic crescent. As dislocation progresses the crescent becomes a half moon, or even a full moon if the lens gravitates far enough, but more commonly the dislocation is anterior and the crescent becomes a peripheral aphakic zone. By this time scleral congestion will have advanced to varicosity; the pupil becomes dilated and the reflex is lost, while the cornea becomes cloudy and the eye is obviously enlarged.

Commonly, the earliest signs of lens dislocation in one eye are accompanied by advanced signs, *i.e.*, hydrophthalmus in the other, for which, in fact, the dog owner first seeks advice. With surprise and dismay the owner may learn that the bad eye is too bad for treatment, and that what was thought to be the good eye is urgently in need of an operation if blindness is to be prevented.

Pre-operative Preparation

The method I am using at present to extract a dislocated lens is on these lines. Some time before the operation, according to the circumstances, a prophylactic dose of penicillin is given intramuscularly. First the eye is prepared by clipping the hair from the lids and from a fairly wide surrounding area. If the animal is sensitive or difficult to control, hair clipping is not attempted until after anaesthetisation. Anaesthesia is important, and I am interested to learn from Mr. Dobree that about 50 per cent. of intraocular operations in man are now carried out under general anaesthesia.

My colleague, Miss Barbara Weaver, to whom I am much indebted for the anaesthetisation of many dogs for eye surgery, usually pre-medicates with chlorpromazine or pethidine, induces with thiopentone, and then maintains the anaesthesia with nitrous oxide and oxygen endotracheally. Phenergan may be given during the operation. Anaesthetisation on these lines, I believe, almost eliminates the very serious risk of post-operative disaster associated with excitement during recovery if an intravenous barbiturate is given alone.

Thorough irrigation of the conjunctival sac with 1/1000 proflavine sulphate solution two or three times before and after the animal is anaesthetised is adequate, I believe, but an antibiotic can be used if preferred. One or two drops of 1/1000 adrenalin solution are an advantage in restricting conjunctival haemorrhage.

To complete the preparation, the eyelids and the clipped area of skin are carefully swabbed over with surgical spirit or proflavine solution and sterile drapes are put over the head which is supported in a convenient position with sandbags. Only the minimal operation area is left exposed.

The Operation for Lens Extraction

The conformation of a dog's head does not facilitate surgical approach to the bulb of the eye. Moreover, with the relaxation of anaesthesia there is a marked tendency for the bulb to recede into the orbit, but temporal canthotomy is a compensation. The incision can well be made with Vigo's scissors after the eyelids have been retracted, but care must be taken that the retractor does not press on the bulb. A retrobulbar injection of normal saline can be used to produce proptosis and so make surgical approach to the eye easier, but bulbar subconjunctival infiltrations can be a serious complication requiring postponement of the operation. Although the reflection may be upon my technique, I prefer to rely mainly on canthotomy.

Having made the canthus incision, a fine thread stay suture is put into the sclera at 12 o'clock about 4 to 5 mm. from the limbus. This suture is clamped and so can be used to control the position of the bulb. At a comparable stage in the human eye operation, the surgeon could make a Graefe knife section of the limbus through the superior half of its circumference, the limbus in man being chosen because a scleral incision bleeds and a corneal incision does not heal well. In the dog, however, both sclera and limbus bleed and the cornea does not heal well. Nevertheless, the cornea appears to be the least undesirable intraocular route in the circumstances.

There is yet another comparative difficulty in the dog. The ophthalmic surgeon punctures and counter punctures the limbus with the Graefe knife and then, with an upward sweep, completes the section. In the dog, however, puncture of the cornea causes loss of aqueous and thus the Graefe knife section, in my experience, is usually made hazardous by the iris collapsing over the blade. To avoid this I find that a corneal section can be made accurately, conveniently and safely with scissors. A technique is to puncture the cornea at a little above 9 o'clock and at about 1.0 mm. or less from the limbus. The puncture is made with a keratome while, in addition to a little traction on the stay suture by an assistant, fixation forceps are used to steady the bulb by grasping the bulbar conjunctiva adjoining the puncture site. When the keratome is withdrawn some aqueous will be lost and the cornea will tend to collapse, but a lip of the puncture can be held with fine-toothed forceps while one blade of the scissors is carefully inserted. Cautiously avoiding damage to the iris, the corneal incision can then be completed along a semi-circle, 1.0 mm. from the limbus. If the limbus or iris is damaged it is probable the anterior chamber will very soon fill with blood. In my experience, hope of the operation having a successful outcome is then best abandoned. This point needs emphasis as the human iris is comparatively avascular and, under the general term iridectomy, has portions excised as a routine in the treatment or prevention of glaucoma, a condition regarded as rare in the dog.

When the corneal section is completed, if not before, there will be some protrusion of vitreous as lens dislocation seems to have the certain accompaniment of hyaloid membrane rupture. In these circumstances vitreous loss must be expected unless the lens is only in the unlikely and very earliest stage of dislocation.

Often the lens presents itself spontaneously; if not, it can be seen through the cornea, allowing the capsule to be grasped with forceps and the lens lifted out. This operation requires care as vitreous is almost invariably adherent to the posterior capsule and severe loss will occur unless the adherent tag is cut with scissors before the lens has been lifted away too far.

In man, vitreous loss is serious, I understand, but not necessarily disastrous. As far as I am able to judge, the same appears to be true of the dog's eye except that it may tolerate a greater loss.

Having removed the lens, I have found that the corneal incision needs to be closed accurately and with the greatest care to avoid puncture of the limbus. I use anything from four to six interrupted sutures of 6/o Kalts thread and have found the Grieshaber or Jameson-Evans corneal needle best for the purpose, a suitable needle holder being essential. The cornea is not the easiest tissue to suture and it is helpful to grasp one margin of the incision with fine toothed forceps and pass the needle through it as near as possible to the point held by the forceps. The suture, which should not include Descemets' membrane, is then tied only sufficiently tightly for co-aptation of the incision.

I have used the prefixed corneo-scleral suture which seems to be favoured for the human eye, but do not find it suitable for accurate closure of a corneal section.

In a number of operations I gave protection to the corneal incision by suturing the membrana nictitans to the superior bulbar conjunctiva, but have discontinued the practice as it appears to cause discomfort and encourage pawing and rubbing.

The final stage of the operation is closure of the canthotomy wound with a single row of fine thread or nylon interrupted sutures. If this is done accurately breakdown is very unusual. Rarely does there seem any indication for post-operative treatment other than the application twice daily of a little antibiotic ointment into the conjunctival sac.

For convenience, I think it would be better for me to deal with extraction of the lens for cataract now, and later with the post-operative aspects of this operation, together with those for the dislocated lens.

Operation for the Cataractous Lens

It is impossible briefly to sum up the indications and contra-indications for extraction of the cataractous lens—or indeed to consider the varieties of cataracts, their causes, development and effects on vision—but I think it is true that any dog may have cataract, although the breed incidence is variable. The cataracts to which I shall refer are very largely those developing at any time after the animal has reached maturity.

In my opinion only the dog with failing vision or blindness from cataract really requires an operation because, with reasonable vision in one eye, a dog can manage quite well. It must be remembered, too, that a dog may have diffuse cataracts of both eyes which, on account of their opacity, entirely prevent retinal examination and yet the animal is by no means blind. The indications for operation are therefore a cataract resulting in blindness or marked impairment of vision in an otherwise healthy dog.

In estimating the prospects of operation, it is important to be guided by the pupillary reflex and, unless this is active, it may be assumed there is some concurrent degenerative retinal or other change which excludes reasonable hope of vision being regained.

I have made a practice of examining the urine of dogs suffering from cataract and although diabetes mellitus may well be one cause, it is apparently the least common.

The extraction of the cataractous lens is carried out along the same lines as the extraction of the dislocated lens up to the point of the completion of the corneal section. It is an advantage, however, to have a well dilated pupil, but this is not always easily obtained. Wherever possible the dog owner is asked to instil a mydriatic for a day or two before operation, but induction of anaesthesia even with a short acting barbiturate usually results in effective counteraction. If, after anaesthetisation, mydriasis persists it is generally lost when the corneal puncture is made.

In the last year or two my aim has been the total extraction of the lens, *i.e.*, the extraction of the lens with its capsule intact, ideally leaving the hyaloid membrane intact and thereby preventing vitreous loss. I believe, however, that in the course of cataract development there may often be spontaneous rupture of the hyaloid membrane. To ensure success in total extraction, the undislocated lens must be detached from the zonular fibres, and I usually find this detachment difficult. Specially designed forceps, *e.g.*, Arruga's and Duthie's, are used in human lens extraction to grasp the capsule without rupturing it, and, by a side to side movement, to break down the adjacent zonular fibres. I have tried to use this technique in dogs but frequently find the zonular fibres are resistant to the extent that the capsule ruptures where it is grasped. Alternatively, if the fibres rupture, there is haemorrhage from the ciliary body. This occurs in spite of the fact that the capsule is grasped as near as possible to its thickest part (which my colleague Mr. R. F. S. Creed has told me appears to be the equator), and that the forceps are used in a manner so as to ensure that excessive pressure is not applied to the capsule. It may well be that my failures with this technique have only a personal significance, but the dog's eye may have more variations and, as yet obscure, difficulties than those which have to be overcome in the human eye.

To prevent rupture of the capsule and haemorrhage from the ciliary body, the method of releasing the lens first by grasping the capsule with Arruga's forceps and then passing an iris repositor below the iris towards the lens equator is sometimes practicable. The object is to initiate breakdown of the zonular fibres and then extend the breakdown

by lens movement or by further use of the iris repositor. This technique has given some encouragement and, on a few occasions, I have been fortunate enough to find the hyaloid membrane intact after an uncomplicated total extraction. The meticulously careful technique which, I believe, is necessary in completing the final stages of lens delivery from the human eye, does not seem applicable to the dog where the operation is necessarily of a very open and iris-exposing nature.

To return to the operation, when the cataractous lens has been extracted, the corneal wound is closed as already described above. Ordinarily, corneal sutures can be removed in 8 to 10 days, but for safety it is often better to allow more time. Local anaesthesia is sometimes sufficient for removal of the sutures but, quite frequently, intravenous thiopentone sodium is necessary.

Post-operative Treatment

The post-operative management of lens extraction, in my opinion, is best carried out by the owner in the dog's accustomed environment; this is usually very much more desirable than keeping the animal in kennels. The post-operative management, after all, is little more than keeping the animal as quiet and contented as possible. Bandages, muzzles and Elizabethan collars are of very uncertain value and, if the dog's behaviour demands such precautions, the prognosis is unfavourable.

The critical post-operative period is the first few days when, depending upon the animal's temperament, if not on the owner's, wound breakdown as the result of direct or indirect trauma is the important risk. This risk decreases day by day as the cornea heals.

Complete breakdown in my experience is very rare, but even a slight breakdown may well result in complete failure. On the other hand, a small breakdown with iris incarceration can heal, and is best left alone. Surgical intervention will almost certainly cause intraocular haemorrhage. Any breakdown of the corneal wound, however, must be regarded as a serious threat to success.

Some incarceration of the iris in the corneal wound has been fairly common in my operations and remains evident in many of those I have called successful, but the pupillary reflex in the remainder of the iris may be good and the animal apparently not inconvenienced. Sometimes the incarceration is serious in the sense that a gradually increasing corneal protrusion develops accompanied by hydrophthalmus. Quite apart from such protrusions or incisional herniae, hydrophthalmus alone is a common cause of failure, the onset often being evident within a few days of the operation.

On the other hand, it may be delayed for some months after an operation which so far has apparently been successful. The best course in established hydrophthalmus is enucleation and usually this appears to benefit the animal's spirits and well being.

The Use of Iridectomy

I have not made any reference to iridectomy until this point when it seems appropriate and convenient. It might be expected that iridectomy would tend to prevent the post-operative complication of iris incarceration and hydrophthalmus, but so far I have no evidence in support of this. Firstly, the iris bleeds freely, even if only pricked, and the bleeding is very difficult to control. The incidence of post-operative hydrophthalmus, however, encouraged my perseverance with iridectomy and an actual cautery of platinum was used as recommended to me by Mr. John Magnus, ophthalmic surgeon. I found the platinum point had to be brought to a red heat to effect iridectomy as a lower temperature allowed the iris to adhere to the cautery which, when withdrawn, caused haemorrhage.

In the few cases where cautery iridectomy has been successful hydrophthalmus has not been prevented, and thus I feel that Mr. Smythe's contention that iridectomy cannot be expected to serve a purpose in the dog is supported, at least by my experience.

Intraocular haemorrhage from the iris or ciliary body during an operation can be extraordinarily persistent and anything other than the mildest brief seepage is ominous. The blood clot can very seldom be satisfactorily removed and, in adhering to the iris, usually causes a plastic iritis.

Failure from intraocular infection appears to be very unusual in the dog and, from what I understand, less of a risk than in man. The dog and the veterinary ophthalmic surgeon may at least be thankful for this.

The recorded operations which form the basis of this paper are:—

LENS EXTRACTIONS FOR DISLOCATION

Wire H. Terriers	Sealyhams	Spaniels	Others	Total
82	20	7	20	129

The results are roughly classified as follows: Good 30, fair 27, failure 55, result unknown 17.

LENS EXTRACTIONS FOR CATARACT

Spaniels	Poodles	Retrievers & Labradors	Others	Total
25	13	7	61	106

The results: Good 15, fair 16, result unknown 25, failure or probable failure 50. Total number of recorded operations 235.

In conclusion, I wish to thank the many colleagues who always have so patiently given me the good assistance which is essential. It is also the right opportunity for me to pay a very warm tribute to the work done by my friend and colleague, Professor Clifford Formston, in a field of veterinary ophthalmology so much wider than mine. It is right too for me to say, and I am sure you will agree, how very much Mr. Smythe's book was needed, how very well indeed the need has been met, and how much I wish the book could have been compiled by me.

3. Some Observations on the Surgery of the Eye in Animals

BY

R. H. SMYTHE

MR. Smythe said he would not tell his audience that most of his attempts at eye surgery had been successful: that would be an exaggeration. He was an ordinary, simple clinician, but had experimented quite a lot with eyes and would like to emphasise some of the difficulties. One of the greatest difficulties was that the average clinician knew practically nothing about the anatomy or physiology of that organ but he, or she, had every opportunity to learn. Before making any attempt at eye surgery one required to know the intimate structure of the eye and the relationship of the parts, all the " whys " and " wherefores " and why some things happened and others did not.

He congratulated Mr. Knight on the brilliant work he was doing on eye surgery but must remind the audience that he had the essentials at hand—premises, equipment, and the ideal staff. He did not think any great success could be achieved unless the whole operation could be properly organised in advance. In the average practice one had to rely on the assistance of the kennelmaid, who was more likely to jump at the crucial moment than the patient was.

It was quite easy to obtain eyes for experimental work. He was out of favour with his own butcher because he kept a standing order for six sheeps' eyes per week.

As regards ophthalmic work generally, the veterinary surgeon had been retarded in his progress by the economic aspect. When a farmer owned a cow with defective eyes they stayed that way so long as she produced milk, and then she was eaten; a partially-blind horse was unsafe and the same thing happened to him. Altogether, they carried out little eye work on the large animals but there was an immense field before them in regard to the smaller ones. His first recollection of eye surgery dated back 60 years when he watched the local farrier insert a string soaked in turpentine through the skin of the lower lid in a case of entropion. The end result was excellent. He did not want this method of operation coupled with his name though less successful ones had been!

Treatment for Corneal Ulcer

A condition they all encountered and treated with uncertain results was corneal ulcer. The old people used to touch them with silver nitrate or carbolic and even some of those recovered. He thought that almost every practitioner could apply a successful surgical method if he encountered the case early; the results were uniformly good provided no infection was introduced. He referred to the method advocated some years ago by Thomas Henderson. A short incision was made along the corneal margin and a shorter T-shaped incision was directed from its centre towards the ulcer, keeping always in the sound tissue. This reduced the tension in the anterior chamber, prevented prolapse of Descemet's membrane, removed the pressure from the damaged cornea, and permitted rapid healing of the ulcer.

Personally, he used a very sharp No. 11 Paragon (the blade only, or similar blade, or a good keratome), and wrapped it to within 2 mm. of its tip with sterile wool. This prevented too sudden a rush of aqueous and prolapse of the iris. Scissors could be used to complete the incision if preferred. He disinfected the ulcer, before operating, with a 3 per cent. solution of picric acid in alcohol, flushed that out with saline, then instilled a 1 per cent. solution. Probably antibiotics were more modern. The dog pays little attention to the eye afterwards. In four hours the anterior chamber begins to refill and in 48 or less it is again normal. The incision may need a little re-opening on the third day.

One of the greatest dangers in treating corneal conditions was a continuance of blepharospasm. The eyelid with its hairy appendages became squeezed against the inflamed cornea. Normally, the third eyelid should interpose itself and act as a shield but the reflexes became disturbed, the membrana ceased to function, and the eyelid took charge.

All corneal injuries resulted at once in hypertension within the anterior chamber which induced the creation of a vicious circle.

Operations for Cataract and Lens Extraction

In the matter of cataract operations, he had performed a few in old dogs where both eyes were involved.

He had not found the operation particularly difficult. He had operated with the help of a prenarcotic with cocaine as a local anaesthetic but, like Mr. Dobree, he preferred a general anaesthetic, preferably pentothal. After the eyes had healed he saw little improvement in vision, but in old dogs there might be defects present in addition to cataract. In congenital cases operation in young dogs might be more satisfactory. In early lens luxation into the anterior chamber, lens extraction is easy and often quite successful in preventing pain and ultimate loss of the eye from hydrophthalmia. He preferred to operate when the iris and lens first commenced to wobble. If luxation did not rapidly occur in such cases it usually indicated adhesion between the back of the lens and the hyaloid membrane covering the vitreous. Operation then removed the lens with a lot of the vitreous, and this was usually followed by displacement of the retina. In other cases, when the lens disappeared behind the iris, there was present a liquefaction of the vitreous. He had attempted one operation unsuccessfully in such a case without being able to locate the missing lens.

Extent of Vision after Operation

It was difficult to decide how much a dog really saw following the operation of lens extraction as small dogs, blind from any cause, soon learned to find their way about a house and garden by smell and hearing. One good working sheepdog he operated on successfully could find the field but was quite unable to find the sheep. Another Cairn, fitted with

suitable glasses on leather frames, wore them obediently and trotted quite well around the town for six months with her owner until the animal stepped off a kerb and was run over by a bus. Dogs do not take kindly to glasses; they look *at* them rather than *through* them, just as they are more interested by a bluebottle on the pane than upon anything happening outside. In America glass eyes were as popular as dentures for dogs. He had experimented with the former but had not found the dog which did not at times violently shake its head. This is always the end of the glass eye.

He would like Mr. Knight to say how much he thought a dog saw after lens extraction, if not fitted with spectacles, and perhaps Mr. Dobree would describe the extent and quality of human vision after a similar operation when not aided by glasses.

Discussion

Mr. Roper (Ewell) congratulated the speakers and asked whether hypertension was an indication for lens extraction rather than extirpation in some patients; even though the chances of vision being restored were slight, yet the dog would be freed from headaches. He was told by an ophthalmic surgeon that in corneal sutures great care should be taken not to suture through Descemet's membrane into the anterior chamber. He had been told also that the cornea of the dog was unsuitable for experimental corneal grafts as they did not take. Could the speakers comment upon that?

Professor Formston (Streatley) said he had listened to the speeches with great interest and he particularly appreciated the refreshing candour of Mr. Knight on his results of lens extraction in the dog. It was 27 years ago when he extracted his first dislocated lens, and he was bound to say that throughout the years his results were no better now than they were at that time. It was not an operation which could be easily influenced by technique, since in the majority of cases where the lens was either subluxated or luxated, one had to operate on a glaucomatous eye. If at the time of operation there was a rapid filling of the anterior chamber, it was a fairly sure sign that the patency of the drainage channels was not good and neither was the prognosis.

One recognised all the hazards of the operation covered so admirably by Mr. Knight, and one was always trying to devise new techniques to try to overcome them. It was necessary, because of the relative size of the lens, to make a fairly extensive limbal section, and this was not easily effected by a Graefe's knife because of the readiness with which it could engage the iris in a collapsing anterior chamber. For this reason most operators at some time or another had to resort to the use of scissors to complete the section after using a knife or a keratome. He (Professor Formston) did not care for the use of scissors if they could be avoided because of their squeezing effect and possible future interference with the angle of filtration. He favoured an initial conjunctival flap 2 to 3 mm. from the limbus with control of bleeding prior to section with the Graefe's knife. In this way there was less resistance to the knife and the section could often be made before the iris collapsed onto the blade. In many cases of extraction of a lens where it had previously become dislocated and where a secondary glaucoma was in evidence, the iris showed little tendency to constrict with penetration of the anterior chamber. This, although a bad sign in itself, was less of a menace than an active iris in a cataract extraction.

When a glaucoma was present he was all too familiar with breakdown of the wound despite what was thought to be competent suturing, but when the wound was left unsutured results had been better.

It was customary, prior to extraction of a cataractous lens, to instil atropine solution several days prior to operation in order to bring about dilatation of the pupil. Despite this pre-operative precaution there was always a tendency for the pupil to constrict with the escape of aqueous at the time of operation, and very often a knuckle of iris would prolapse, which was difficult or impossible to replace. He had given up the use of atropine but had found that prior to making the limbal section if, with a fine dental needle a little local anaesthetic solution was introduced into the anterior chamber, one could paralyse the sphincter iridis muscle and the pupil would dilate and remain so for up to 12 or 24 hours. This facilitated section with little or no danger to the iris, and by controlling spasm of the latter, tended to prevent its prolapse either at the time of operation or subsequently.

One always recognised the importance of haemorrhage control but complete haemostasis was not always possible; he had found that where seepage was minimal, if the limbal section was not sutured, escape of aqueous which was bound to take place for some hours tended to remove blood from the anterior chamber.

He ended by saying that whilst this form of eye surgery was intriguing and spectacular, the results, to say the least, were often disappointing.

Mr. Singleton (Canine Research Station, Kennett) said he would like to mention one case which might be of general interest. The subject was a Corgi bitch with bilateral pigmentation of the cornea in which corneal grafting appeared to be indicated. Following grafting the donor graft was slightly opaque but the retention sutures held it in place and within eight days it had obviously taken and at the end of three weeks the graft was clearing. Unfortunately as the graft cleared, the pigmentation commenced to pass over the graft until only a central portion about 2 mm. in diameter remained semi-transparent. However, the interesting point was that the graft "took." Fortunately the dog was a good patient and paid little attention to the eye, the lids of which were sutured and both eyes were bandaged for 14 days. Pethidine was administered for one week post-operatively.

Mr. Dobree said in closing that the main differences between human and animal cataract surgery seemed to be that, firstly, in the former vitreous adherence to the lens did not occur and vitreous loss was not

(*Concluded at foot of col. 1 overleaf*)

The Toxic Effect of Certain Seed-dressings on Wild and Game Birds

BY

R. B. A. CARNAGHAN and J. D. BLAXLAND

Ministry of Agriculture, Fisheries and Food, Veterinary Laboratory, Weybridge

DURING March and April, 1956, unusually severe mortality in wild birds occurred in the southern, midland, and eastern counties of England. Wood pigeons appeared to be affected in particular, and large numbers of them were found dead. Several reports were received from observers who had seen wood pigeons drop dead during flight or from trees while roosting. Severe mortality also occurred among pheasants on a number of estates. On one particular estate over 50 adult pheasants were found dead in the course of a month, in addition to hundreds of dead wood pigeons. On another estate, 300 pheasant chicks, aged four to six weeks, out of 1,200 died within a few days showing marked nervous symptoms prior to death.

Post-mortem examination of wood pigeons revealed no evidence of disease and bacteriological examinations were carried out with completely negative results. Attempts at transmission to laboratory pigeons using material from dead birds were also unsuccessful. The *post-mortem* changes in these birds were not specific; in most cases they were in rather poor bodily condition, but not sufficiently debilitated to suggest starvation. There was general congestion of the visceral organs and an almost constant feature was the partial or complete detachment of the gizzard lining from the underlying muscle which often showed a number of ecchymotic haemorrhages. The digestive tracts were usually empty except for a small quantity of grit and husks in the gizzard and mucoid material in the intestines.

Histological examination showed severe congestion of the liver and kidneys with marked depositions of haemosiderin. Once the possibility of virus and bacterial diseases had been eliminated, the general appearance of the majority of the carcases and of the visceral organs justified a tentative diagnosis of poisoning.

The circumstantial evidence surrounding these cases, led to enquiries being made as to the nature of the dressings used on grain sown in the vicinity of some of these cases for the prevention of insect pests, and fungus diseases. It was found that the seed dressings most frequently used were those containing dieldrin, organo-mercurial compounds or a combination of these substances.

Experimental Procedure

Small stocks of grain dressed with some of these preparations were purchased and fed to domestic pigeons at the laboratory. The dressings used were:—

		Active ingredient
1.	"Dieldrex 15" ...	Dieldrin (contains not less than 85 per cent. of 1:2:3:4:10:10-hexachloro-6:7-epoxy-1:4:4a:5:6:7:8:8a-octahydro-1:4:5:8-dimethanonaphthalene and not more than 15 per cent. of insecticidally active related compounds).
2.	"Seedox"	A mercury, plus dieldrin preparation.
3.	"Ceresan" ...	An organo-mercury preparation.
4.	"Mergamma" 'D'	Organo-mercury preparation plus "Gammexane."

Four groups of three pigeons were fed samples of wheat and barley dressed with these preparations. Some difficulty was experienced in inducing the birds to eat the grain voluntarily and they had to be force-fed. Those receiving "Dieldrex" consumed about 4 oz. during a period of seven days. A certain amount of the grain was regurgitated and it was therefore not possible to ascertain the exact amount eaten. All these birds died; the first, seven days after commencing the diet, the second on the 10th day, and the third on the 13th day.

Some Observations on the Surgery of the Eye in Animals.—*Concluded.*

in itself a major calamity although it might lead to subsequent retinal detachment. Secondly, iris prolapse and adherence of iris to the section was to a certain extent preventable by accurate apposition of wound edges, iridectomy, and air injection into the anterior chamber. Thirdly, it was possible to tell by tonometry whether a raised intra-ocular pressure was present. If so, this was first reduced and the cataract removed at a subsequent operation.

It would not seem necessary to provide glasses for animals after removal of cataract as there was a dramatic improvement in vision in the human subject even before spectacles were provided.

Mr. Knight said in closing that he had learned a great deal from Mr. Dobree. He had done one corneal graft, but it was a failure; the graft took but later became opaque.

A vote of thanks to the speakers proposed by the Chairman ended the meeting.

The pigeons receiving " Seedox " treated grain died on the fourth, sixth, and 10th day, having received 2, 3, and 4½ oz. of grain respectively.

The two groups of pigeons fed on " Mergamma " and " Ceresan " dressed grain consumed approximately 15 oz. each in a period of six weeks. These pigeons were force-fed for two weeks after which, feeding was voluntary. One of the " Mergamma " fed birds died after three weeks and *post-mortem* examination showed generalised emaciation with abscess formation in the liver. The five other pigeons in these groups remained healthy. They were killed at the end of six weeks and mercury estimations were carried out on the liver and kidneys. These organs contained less than 1 part per million of mercury which is an insignificant amount from the point of view of toxicity.

Further experiments were then carried out to determine the minimum quantity of " Dieldrex " which was toxic to pigeons. Weighed amounts of dressed grain were shaken in water to remove the dressing and the washings administered *per os* to pigeons, which were subsequently fed on normal food. Groups of two pigeons each were given the washings from ½, 1, 1½, 2, 3, and 4 oz. of " Dieldrex " dressed grain. The birds receiving washings from ½ to 1 oz. survived and showed no ill effects, but those receiving washings from 1½ oz. and over, died, death occurring between the fifth and ninth day following administration.

The first symptoms appeared about 48 hours before death. In the cages, the affected birds were " hunched up " and listless. In flight, they were ungainly and tended to lose balance when alighting. This difficulty in maintaining balance increased and the birds finally squatted on the hocks and showed a tendency to fall over backwards. Twenty-four hours before death the nervous symptoms became more pronounced and were characterised by rapid side-to-side movements of the head through 180° with slight tremor of the neck and head. There was continual blinking of the eyelids suggesting photophobia. In those birds which were seen to die, death occurred during a violent convulsion, while in those experimental birds that were found dead there was usually evidence of damage to the tips of the wings and the cages were in disorder suggesting convulsions prior to death.

Post-mortem examination showed congestion of the liver and kidneys and degeneration of the gizzard lining with ecchymotic haemorrhages on the surface of the underlying muscle. The changes were, in fact, similar to those seen in the dead birds received for *post-mortem* examination and histological changes were also similar.

The feeding experiments were repeated on pheasants and the results were identical to those in pigeons, those seed dressings containing dieldrin causing death within 10 days while the organo-mercury preparations were non-toxic.

Discussion

The fact that the experimental pigeons and pheasants died, after a period of illness when receiving dieldrin dressed corn, seems somewhat contrary to the field history, when apparently normal pigeons were seen to drop dead after rising from a field or tree. But the emptiness of the digestive tract of these birds, a noticeable feature of the *post-mortem* examination, indicated that death was in fact the termination of a more protracted illness than the circumstances suggested.

Refusal of the laboratory pigeons and pheasants to eat the dressed corn voluntarily was probably due to the strangeness of the diet, as compared with their routine feed, and did not necessarily mean that the dressed grain was unpalatable to them.

The spring of 1956 followed a severe late winter and wood pigeons and game birds had probably suffered some degree of hardship, before the spring-sown corn became available to them. Furthermore, it was a very dry spring, particularly in southern and eastern districts, and this might mean that the dressing adhered to the grain for a longer time than it would in a normal season. It was noticeable that the mortality among wild and game birds ceased quite abruptly with the sprouting of the corn.

The loss of pheasant chicks to which reference is made in the introduction was attributed to the feeding of cut wheat from a consignment which on investigation proved to be dressed seed corn. The mortality ceased when this was withdrawn from the diet.

It is felt therefore that both circumstantial evidence and the results of laboratory experiments here reported prove that dieldrin poisoning may occur in wild and game birds when this substance is used as a seed dressing.

Conclusions

The circumstances surrounding the finding of large numbers of dead wood pigeons and pheasants in the southern, midland, and eastern counties of England during March and April, 1956, suggested the possibility of poisoning and it has been shown in the laboratory that grain dressings containing dieldrin are toxic to these birds. The administration of washings from as little as 1½ oz. of dressed grain proved fatal to adult pigeons. Deaths from dieldrin poisoning occurred between four and 10 days after administration. Grain dressings containing organo-mercurials and gamma-BHC were found to be non-toxic to both pigeons and pheasants. It is suggested that the widespread use of seed dressing containing dieldrin was responsible for the severe mortality which occurred in wild and game birds.

Acknowledgments.—Acknowledgments are due to Mr. L. McGirr and Mr. A. F. Machin for carrying out the mercury estimations, and to Mr. R. McNeil, Divisional Veterinary Officer, for obtaining the samples of dressed grain and the pheasants used for the experimental feeding.

CORRECTION

In the note on the R.C.V.S. Council Election published last week (*Vet. Rec.* **69.** 308), Mr. Stewart's initial was wrongly given as " I "; it should have read " Stewart, T., Edinburgh."

Persistent Right Aortic Arch in the Dog Causing Oesophageal Obstruction

BY

DONALD LAWSON, BARBARA PENHALE and GEORGE SMITH

University of Glasgow, Departments of Veterinary Surgery and Surgery

THE developmental anomaly of right aortic arch may be asymptomatic and diagnosed only at autopsy. In some cases, however, due to the presence of an additional structure such as the ductus arteriosus, ligamentum arteriosum or a left aortic arch, a " vascular ring " is formed which embraces the trachea and oesophagus and in so doing may give rise to constrictive symptoms. Such has been described in the human, the dog and in bovines.

In the dog some 15 cases, mainly of right aortic arch and ligamentum arteriosum type of ring, have been described to date and in one case successful surgical intervention carried out, Detweiler & Allam (1955). No case of operation for double aortic arch has been noted prior to our Case 2.

Present knowledge of the formation of the aortic arch is mainly due to work of Congdon (1922). The aorta is formed from the aortic sac, the fourth branchial arch and the fusion of the bilateral dorsal aortae to form the definitive descending aorta usually lying to the left of the vertebral column. Normally it is the fourth arch on the left side which persists while the right regresses. Should the opposite event occur, the end result is a right aortic arch with a left descending aorta. In such a case, the aorta runs behind the oesophagus to gain the left side of the vertebral column. The ductus arteriosus develops normally from the sixth left branchial arch and this structure or its remnant, the ligamentum arteriosum, running between the origin of the left pulmonary artery and the descending aorta, completes a ring around the trachea and oesophagus. This type is illustrated by Case 1. The second type of vascular ring is illustrated by Case 2, in which there is right aortic arch with retro-oesophageal passage of the aorta to become a left descending aorta. In addition the left aortic arch persists forming the remainder of the ring around the trachea and oesophagus. A third type is possible as shown by one of the cases of Detweiler & Allam (1955). In this form, the right aortic arch is drawn abruptly to the left and the left subclavian artery arises from the left dorsal root of the aorta, passing upwards and forwards along the side of the oesophagus. The vascular ring in this case is incomplete but may give rise to symptoms. Fig. 1 illustrates these three types.

Symptomatology

Whereas in the human, due to the relatively small size of the trachea, pressure symptoms from the ring take the form of respiratory distress, this is not usually so prominent in the dog. In this latter species oesophageal obstruction predominates. It is noted that the animal regurgitates food soon after ingesting it. This is particularly likely to occur when solid foods are given after weaning. Since the obstruction leads to dilatation and pouching of the gullet above the site of constriction, the condition becomes progressive and death from inanition may occur.

If the encroachment on the tracheal lumen is marked there may be inspiratory stridor. Broncho-pneumonia from inhalation of regurgitated food may occur.

The posture of the animal, particularly during feeding, is fairly typical. The head is held low and well forward, presumably in an effort to straighten out the oesophagus and trachea. If pouch formation, proximal to the area of stenosis, is marked, the food-filled pouch may be felt in the front of the root of the neck. Radiologically, the diagnosis can be made by barium swallow during screening in the antero-posterior and lateral views. The displacement of the oesophagus forwards by the retro-oesophageal portion of the aorta and its constriction by the vascular ring gives a characteristic picture. The dilatation of the gullet proximal to the constriction was a striking feature in both our cases.

Case Reports

Case 1 (No. 5848)

A seven-month-old Yorkshire terrier bitch was presented with a history since birth of poor weight gain and vomiting one minute to one hour after food. The pup was in poor physical state. A test meal was readily eaten. Immediately thereafter a swelling developed in the lower part of the neck, disappearing after the animal had been sick. This occurred about two minutes after ingestion of food. The regurgitated food was little altered but mixed with saliva. It was eaten again with the same results.

A barium swallow showed a dilated anterior oesophagus which was constricted at the base of the heart (Fig. 2a and 2b).

Due to the poor condition of the animal, an operation was delayed in an attempt to improve its physical state. Two days later it went off its food, developed diarrhoea and died.

Post-mortem *Examination.*—This showed dilatation of the oesophagus from just distal to the pharynx to the base of the heart. The diameter of this portion was 4 cm., while the wall was thinned. There was a right-sided aortic arch, and the descending aorta was drawn to the left by a persistent ligamentum arteriosum which originated from just beyond the origin of the left pulmonary artery and was inserted into the descending portion of the aortic arch immediately distal to the origin of the left brachial artery (Fig. 3a and 3b).

Case 2 (No. 6334)

An 11-week-old Greyhound was presented with a history of eight weeks' vomiting 5 to 10 minutes after eating. Attacks of wheeziness had occurred since birth. The dog appeared well grown and in good health but was thin. A test meal was readily eaten to be regurgitated two to three minutes later, mixed with saliva. This was eaten again and the process repeated three times, after which the animal appeared exhausted and fell asleep.

For the next few days the animal was kept on semi-liquid diet. On this vomiting was inconstant. After a meal the animal appeared uncomfortable. A barium meal examination showed gross dilatation of the anterior oesophagus, especially marked in two places, anterior and below the trachea and over the level of the base of the heart (Fig. 4a and 4b). Just below and anterior to the end of this second pouch there was marked constriction of the oesophagus. These findings were assumed to indicate obstruction from a vascular ring.

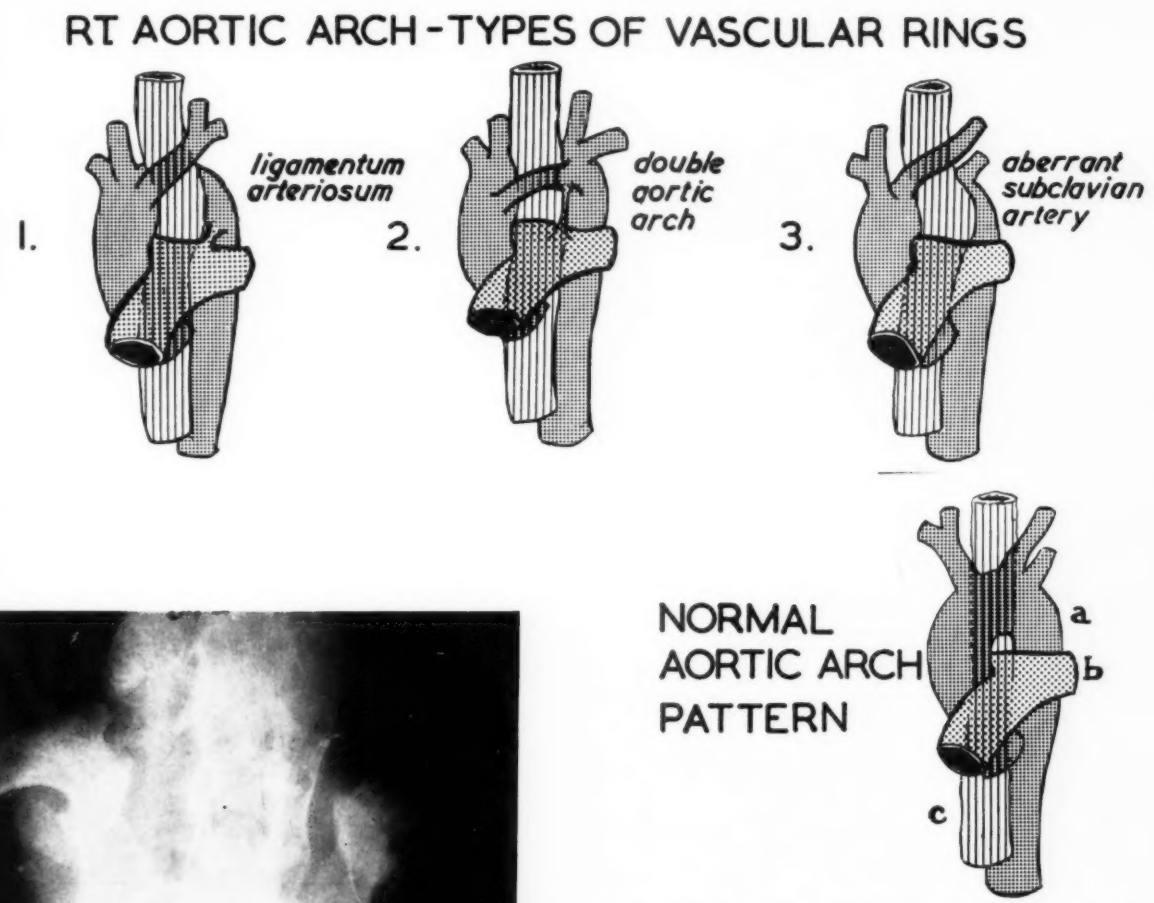

FIG. 1.—To show the types of vascular ring anomalies associated with right aortic arch.
(a—aorta; b—pulmonary artery; c—oesophagus.)

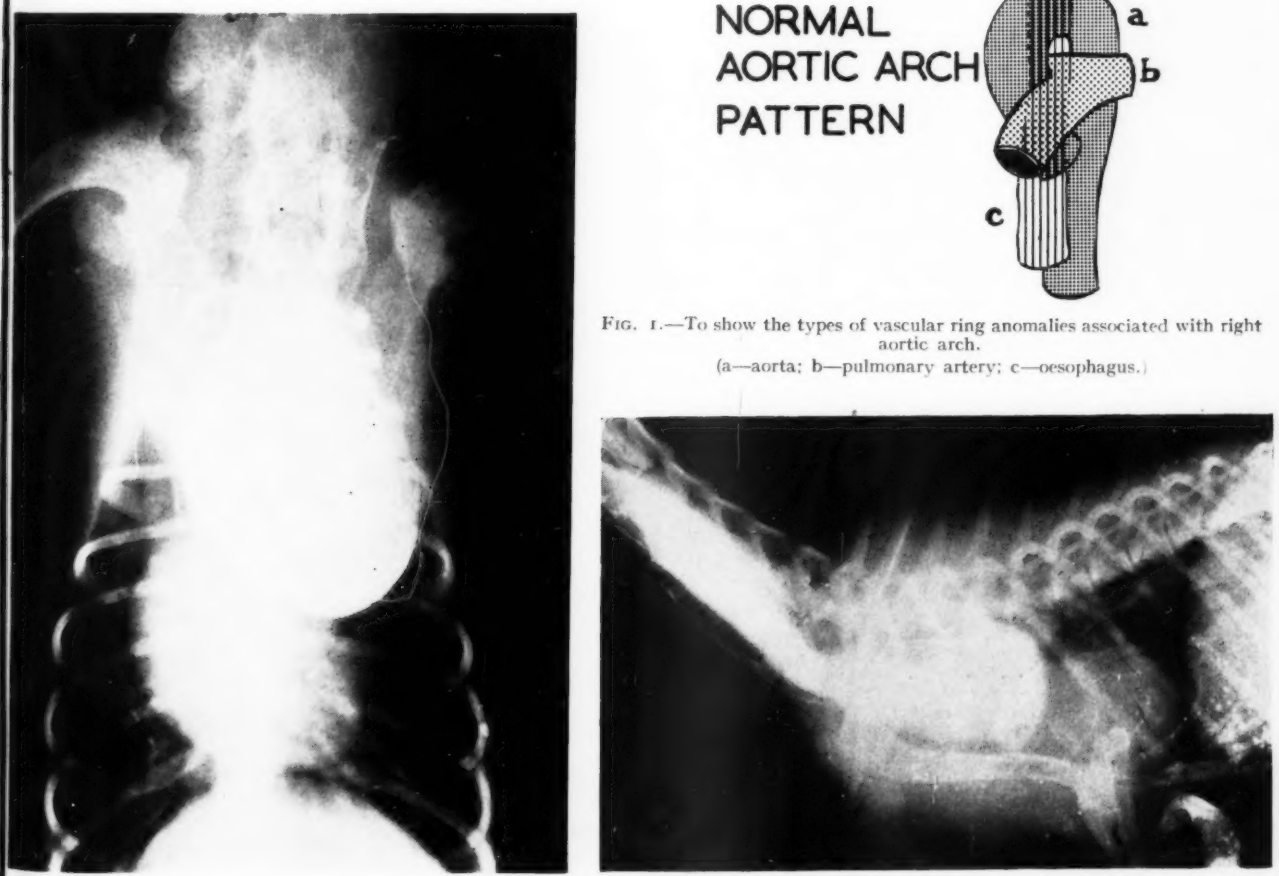

FIG. 2.—Chest X-ray plates after a barium swallow in Case 1. (*a*) Antero-posterior projection. (*b*) Lateral projection.

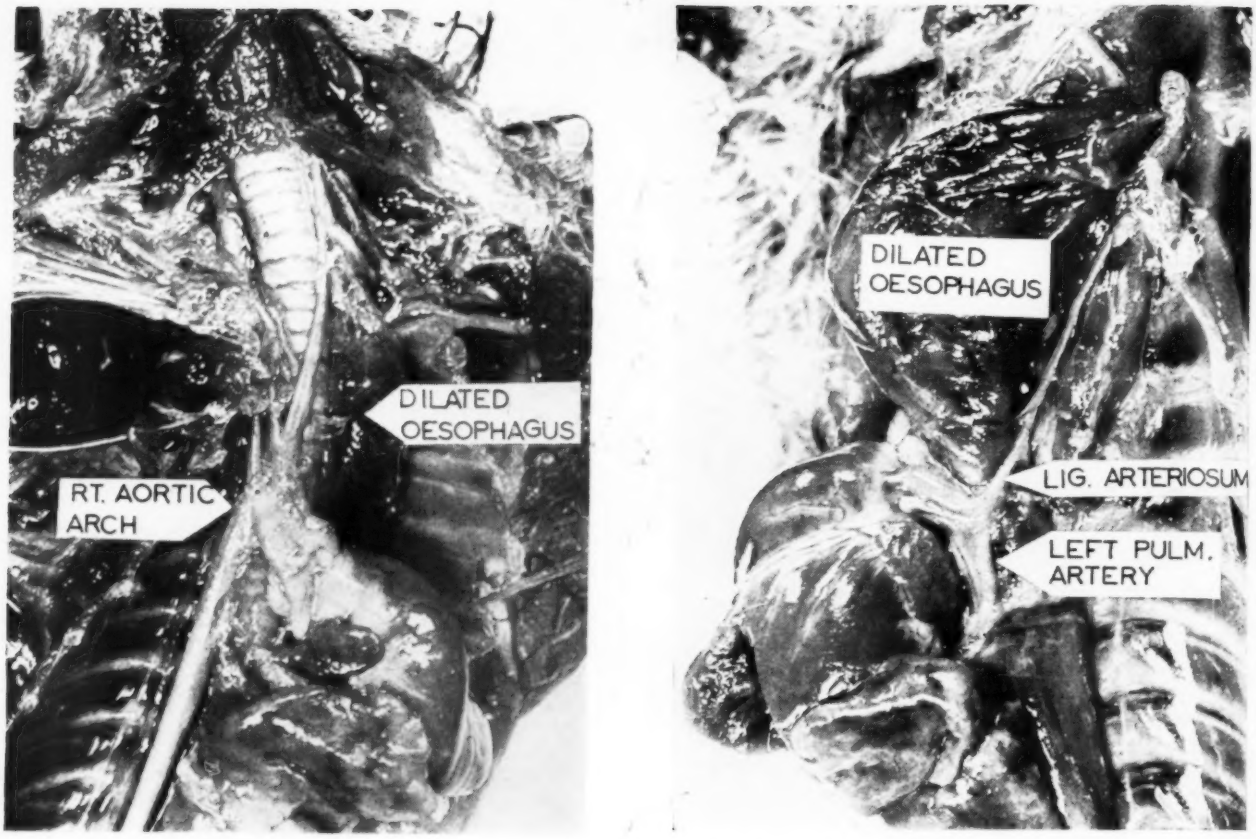

FIG. 3.—*Post-mortem* specimen from Case 1 to show the thoracic viscera. (*a*) View from right-hand side. (*b*) View from left-hand side.

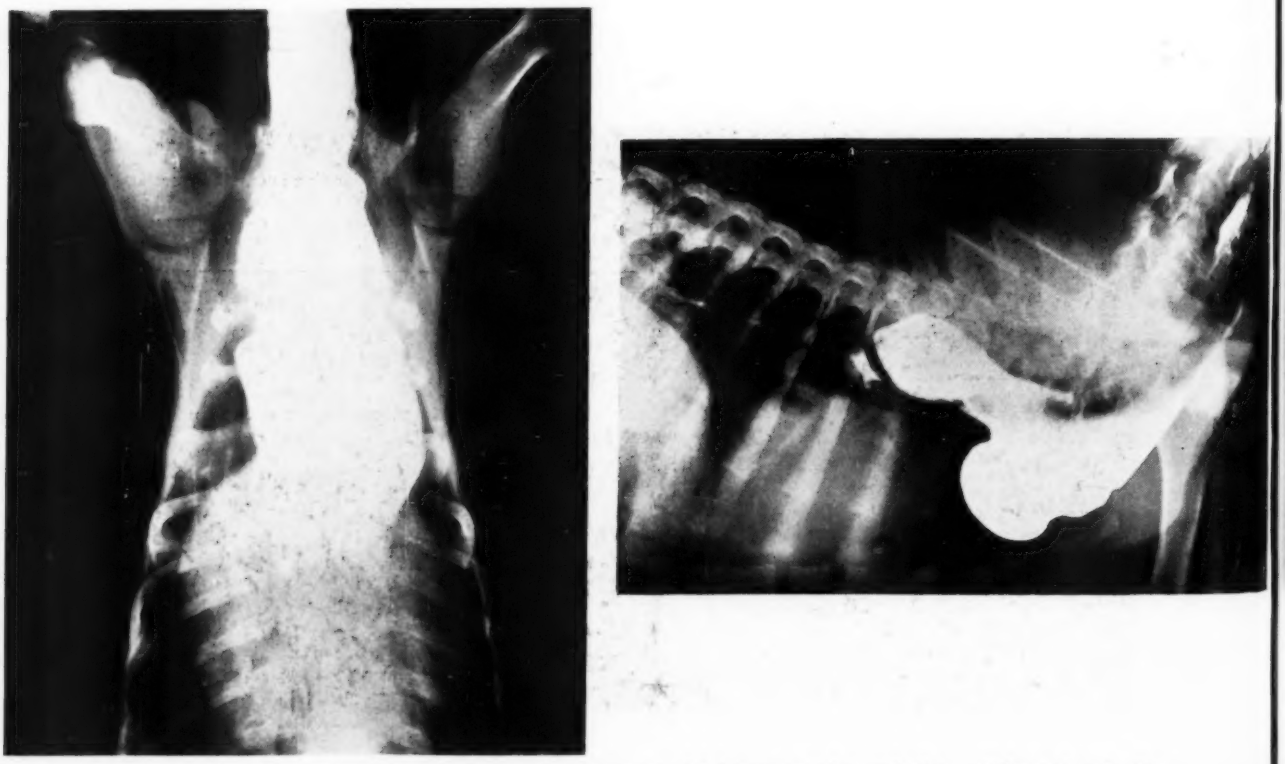

FIG. 4.—Chest X-ray plates after a barium swallow in Case 2. (*a*) Antero-posterior projection. (*b*) Lateral projection.

T. G. COWARD.—PERSISTENCE OF THE RIGHT PRIMATIVE AORTA IN A DOG WITH INCARCERATION OF THE OESOPHAGUS

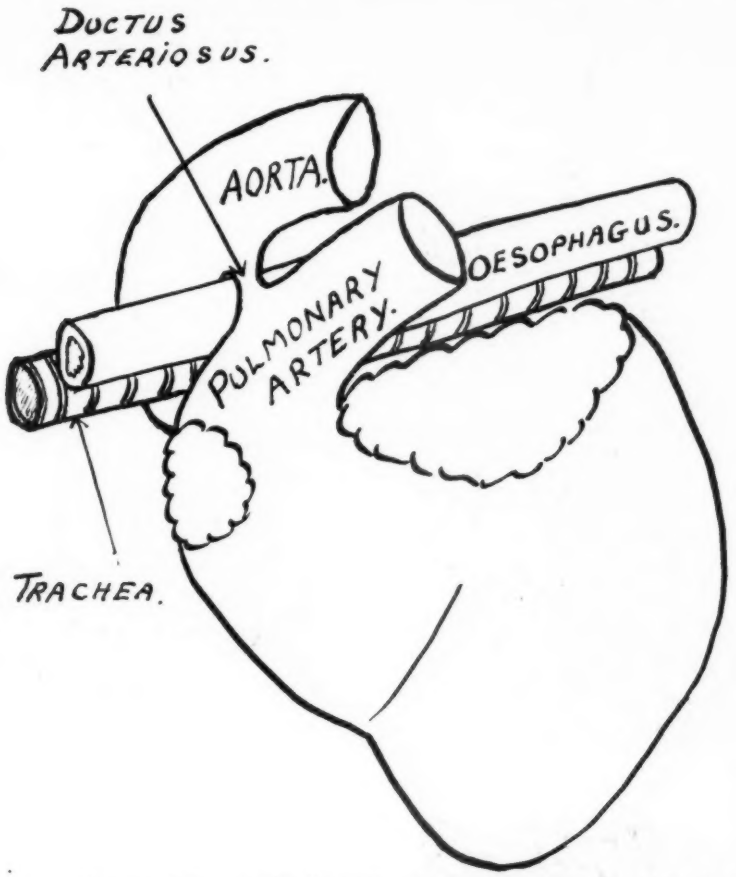

FIG. 1.—Diagram of the vascular " ring " encircling the oesophagus and trachea.

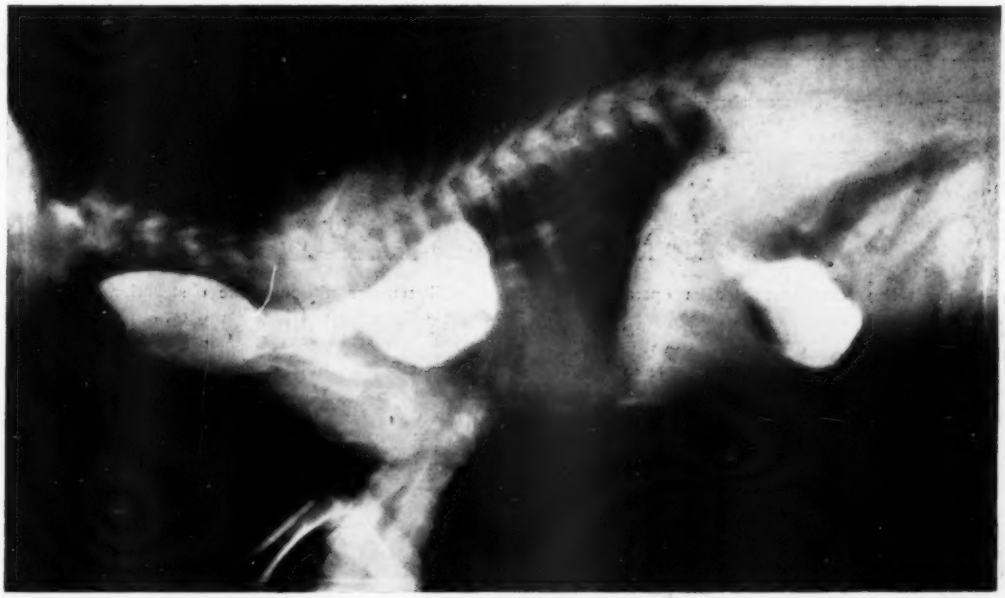

FIG. 2.—X-ray of puppy at seven weeks of age after administering barium sulphate suspension. Note large oesophageal dilatation ending abruptly at level of heart.

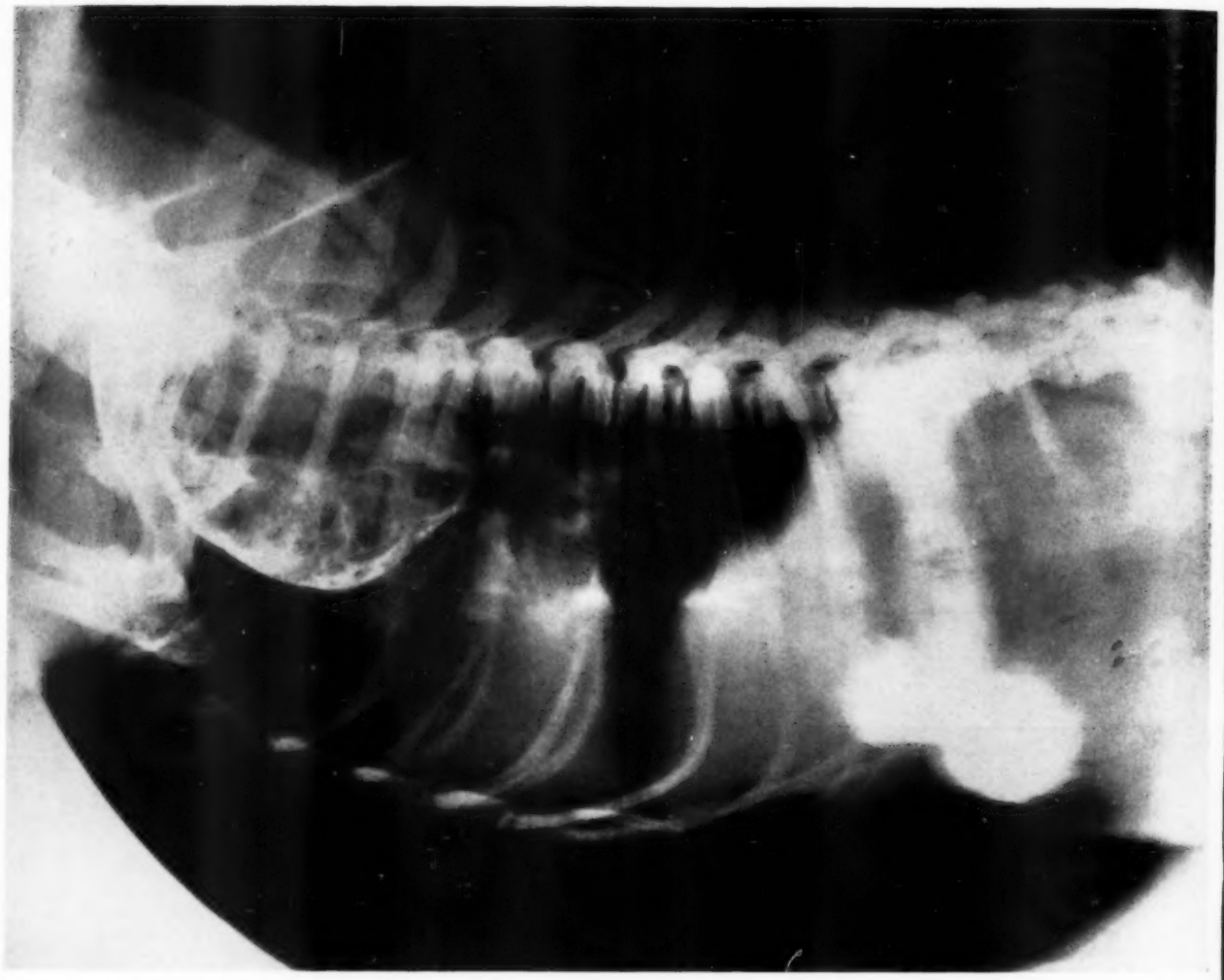

FIG. 3.—X-ray taken seven months after operation. Dilatation still remains although the obstruction has been removed

The respiratory symptoms were thought to be due to pressure on the trachea from the ring.

Operation.—The anaesthetic used was intravenous thiopentone, followed by positive pressure using cyclopropane. During induction the animal developed severe inspiratory stridor and became cyanosed. This was relieved by tracheal intubation with a cuffed Magill tube. An antero-lateral thoracotomy was carried out on the left side without rib resection. To do this the fourth rib was exposed from the junction of its cartilage with the sternum to the angle. The periosteum was then incised along the outer aspect of the rib ; the periosteum was stripped from the posterior margin of the rib from ventral to dorsal, and finally the periosteum was mobilised from the inner surface of the rib. Incision through this periosteum and pleura on the deep aspect of the rib opened the pleural cavity and adequate space was obtained by the insertion and opening of a self-retaining chest wall retractor. (This avoids any trouble with the intercostal bundle and makes for speed in opening and closing a chest. The disturbance of the chest wall structure is minimal ; all important points in operating on pups, especially if they are not in good physical condition.)

The oesophageal pouching was easily identified. There was a right aortic arch with an atretic left arch completing the ring. A ligamentum arteriosum was found running from the origin of the left pulmonary artery to about the middle of the left aortic arch. The left arch and the ligamentum were resected leading to relief of the stricture of the oesophagus and trachea. At the point of crossing by the ring of the latter structure, a tracheal ring was imperfectly formed, allowing of collapse of the trachea. This was thought to be the cause of the attacks of stridor. The chest was closed in layers and emptied of air.

Recovery from the operation was satisfactory but during the first month of convalescence occasional attacks of stridor occurred. Five weeks after operation, when the tracheal ring might reasonably have been expected to have regenerated, the bouts of breathing difficulty continued and the owner requested that the dog be destroyed. Before this was done bronchoscopy was carried out, when it was found that the mid portion of the trachea had a congenital anomaly of its cartilaginous rings, each ring being composed of two or more parts, which allowed the trachea to collapse in this portion of its course.

The animal was destroyed.

Post-mortem *Examination.*—This confirmed that the tracheal rings were deficient anteriorly so that the tube was capable of collapsing quite readily. The oesophageal dilatation, though less pronounced than prior to operation, was still present. The right aortic arch was confirmed, the left arch component had been adequately resected. The descending aorta came to lie on the left side at the level of the eighth thoracic vertebra.

Since these aortic ring anomalies are usually not associated with intracardiac anomalies, it would appear that surgery ought to be used whenever the condition is diagnosed.

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Persistence of the Right Primative Aorta in a Dog with Incarceration of the Oesophagus. A Case Treated Surgically

BY

T. G. COWARD

Barnstaple

DEVELOPMENTAL anomalies of the aortic arches with resulting stenosis of the oesophagus and trachea have been reported in man. A number of cases have been recorded in the dog (Milks & Williams, 1935 ; Davies & Ottaway, 1943 ; Renk & Raethel, 1954 ; Detweiler & Allam, 1955 ; Linton, 1956 ; and others) and at least two cases in cattle (Roberts, Kennedy & Delahanty, 1953 ; Rooney & Watson, 1956).

Normally the left primative aorta persists and lies to the left of the oesophagus and trachea as these organs cross the base of the heart. If the right primative aorta persists it lies to the right of these organs. This results in incarceration of the oesophagus and trachea by a vascular ring composed of the base of the heart ventrally, the aorta to the right, the pulmonary artery to the left and the ductus arteriosus dorsally. More rarely the left axillary artery constitutes the dorsal part of the ring instead of the ductus arteriosus.

Signs of oesophageal obstruction are usually first observed at from 2 to 12 weeks of age. A varying degree of dilatation of the oesophagus is always found in an affected dog. Solid food and sometimes fluids are regurgitated and the animal soon becomes emaciated. In foetal development the growth of the arterial " ring " probably equals that of the encircled oesophagus and trachea allowing them to develop normally. As soon as the foetal circulation gives way to the normal postnatal circulation the ductus arteriosus closes and ceases to grow with the other arteries. It remains as a tiny band of elastic tissue joining the pulmonary artery to the aorta—the ligamentum arteriosum. This probably results in a gradual tightening of the constricting ring during the first few weeks after birth. The delay in the onset of symptoms which sometimes occurs may be accounted for by this fact.

Most recorded cases have either died of starvation and inhalation pneumonia or been destroyed. Two cases treated successfully by surgery have recently been recorded in America (Detweiler & Allam, 1955 ; Linton, 1956).

Case Report

A male Dachshund puppy was first noticed to be abnormal when about three weeks old. Whilst suckling nothing unusual was noticed but as soon as supplementary feeding was started it became apparent that the dog could not retain solids and even fluids were returned if given in more than the smallest quantities at any one time. The animal's physical condition rapidly deteriorated and it was only kept alive by giving very frequent feeds of tiny quantities of nourishing fluids. After feeding fluid could be felt and heard in the distended cervical oesophagus.

At seven weeks old an X-ray was taken after administering barium sulphate suspension (Fig. 2). This clearly showed a very considerable dilatation of the

proximal oesophagus which ended abruptly where this organ crossed the base of the heart. Only a small portion of the suspension had reached the stomach. A tentative diagnosis of persistence of the right primative aorta was made.

At nine weeks of age, when the operation was performed, the dog could still only retain a tablespoonful of fluid and weighed 5 lb.

Operation.—Atropine sulphate 1/200 grain and thiambutine hydrochloride 60 milligrams were injected subcutaneously. This produced a state of anaesthesia which barely needed deepening with only ¼ grain of pentobarbitone sodium given by intravenous injection.

A No. 2. plain Magills endotracheal tube was inserted into the trachea and the pharynx packed off with a damp bandage. This produced an almost air-tight seal which, when the thorax was opened, enabled the lungs to be intermittently inflated with oxygen + 5 per cent. carbon dioxide from a cylinder. The animal was laid in lateral recumbency with the left side uppermost.

A thoracotomy incision was made along almost the whole length of the fifth intercostal space and held open with retractors. The massive dilatation of the oesophagus completely filled the anterior mediastinum and had to be retracted anteriorly to expose the heart and the undilated distal part of the oesophagus. The very small ligamentum arteriosum was, with some difficulty, exposed and cut. The lungs were reinflated and the thoracotomy incision closed. Normal unaided respirations started almost immediately. Twenty milligrams of nalorphine hydrobromide were injected subcutaneously to hasten recovery from the anaesthetic. A prophylactic injection of penicillin and streptomycin was also administered.

Post-operative Course.—Increasing amounts of fluids, gruels, minced and nut-sized chunks of meat and biscuit were retained. Food could not now be detected in the cervical oesophagus after a meal. In the first four post-operative days the animal gained 1¼ lb. in weight.

At the time of writing, seven months after the operation, the dog is well grown and in excellent condition. Normal meals are retained. If, however, excessively large amounts of solids are taken very rapidly part of the meal is regurgitated. This is usually promptly eaten again, this time successfully. A recent X-ray (Fig. 3) shows that there is still a considerable dilatation of the oesophagus although most of the barium suspension has passed into the stomach indicating that there is now no obstruction.

Discussion

Although this dog has made an almost perfect clinical recovery there still remains a large oesophageal dilatation which must be a possible source of trouble. In the case described by Linton the oesophageal dilatation would appear from the published X-ray to have been relatively small and recovery was complete. The dog operated on by Detweiler and Allam, however, seems to have had a larger dilatation, perhaps similar to that in the present case. In their case also the dilatation remained and regurgitation of food recurred eight months after the operation. A second operation was performed and part of the wall of the dilatation resected to reduce the oesophagus to a normal size. These authors suggest that this should be done at the same time as the vascular " ring " is incised.

In the present case a period of over two weeks elapsed after taking the original radiograph until the operation was performed. The dilatation appeared to have enlarged considerably during that time. It is most likely that repeated attempts to swallow food are responsible for the dilatation and, therefore, operation on these cases should be carried out as soon as a diagnosis is made if at all possible.

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HOLIDAY EXCHANGES

France

French girl, 12 years old (Vouziers, Ardennes), would like to exchange visits of one month, either concurrently or consecutively, with an English child of about 12 years, preferably a boy, during the summer holidays.

Germany

The 18-year-old son of a German veterinary surgeon (Director of the abattoir in Nuremberg, Bayern) would like to visit England during the summer holidays between July 1st and September 1st, exchanging with an English boy who could visit his family either concurrently or, by arrangement, earlier or later.

Italy

A 23-year-old Italian student (economics and commerce) from Ravenna would like to visit England—preferably London, Oxford, or Portsmouth—between July 1st and 30th. He would prefer that the exchange visits should be successive and the English student with whom the arrangement is made could, if he wished, visit the Italian family in April or May.

The 18½-year-old sister of the Italian student mentioned in the foregoing paragraph would like to arrange exchange visits with an English girl, on the same basis as outlined above for her brother, and with the same preference for London, Oxford, or Portsmouth.

ANOTHER SUCCESSFUL PROSECUTION BY THE R.C.V.S.

Mr. A. Beck, an unqualified person, was brought before the Barrow magistrates court on the 25th February on a charge laid under Section 5 of the Veterinary Surgeons' Act, 1948. The defendant appeared to the summons and pleaded guilty. The magistrate imposed a fine of £5 and ordered him to pay an advocate's fee of 2 guineas.

Current Literature

BOOK REVIEWS

The Diagnosis of Pregnancy in Cattle. (Die Schwangerschaftsdiagnose beim Rind.) By H. TILLMAN. 5th edn. 1956. 107 pp. with 47 illustrations. Paul Parey, Berlin and Hamburg. Price DM.9.60.

Previous editions of this work appeared in 1908 and 1922 by A. Zieger, and in 1937 and 1942 by J. Richter. The fifth edition by H. Tillman is an up-to-date and enlarged work with new illustrations. Following an introduction, in which the advantages of early pregnancy diagnosis are expounded, the first two chapters deal with the anatomy and physiology of the female genital organs. Next the author mentions the general changes which occur in the pregnant cow and describes the techniques of the special clinical methods, namely, vaginal and rectal examinations. Most of the remainder of the book, pp. 58-100, contains descriptions of the changes to be found at monthly clinical examinations throughout pregnancy. Finally the author mentions the inadequacy of non-clinical methods of pregnancy diagnosis in the cow.

This book contains a clear and concise exposition of pregnancy diagnosis in the cow, and the illustrations are first class. It is a very convenient practical handbook. It does not detract from the usefulness of the book to say there is nothing new in the text.

Applied Animal Nutrition by E. W. CRAMPTON. 458 pp. 86 tables. 15 charts. 28 figs. 55s. W. H. Freeman & Co., San Francisco.

In country of origin, proposed field of study, and style, this text-book is unusual. The reviewer cannot recall a previous work on animal nutrition coming from Canada, even though published in the U.S.A.; and especially one which "has been designed expressly to help bridge the gap between animal nutrition and live-stock feeding practice" and which "is an attempt to extend fundamental animal nutrition into what we may call applied animal nutrition" (author's Foreword).

The book has, indeed, the advantage of having been written by a man with some thirty years' experience in the field of nutrition. From his introductory remarks, intended apparently for Canadian or United States readers, since references to studies in other parts of the world are negligible in number, one gathers that in the experience of the author the teaching of animal nutrition normally stops short at a basic, physiological stage without venturing very far into the sphere of application. His book thus deals with what, in Britain, would best be described as the construction of rations. Although a preliminary knowledge of fundamental nutrition, animal care and management is expected from his readers, Professor Crampton nicely, but wryly, outlines his field and defines his difficulties in his opening sentence —"the dilemma facing the author of a text about feedstuffs and their use in practice is, where to begin."

He begins, in fact, with a first Section (119 pp.) devoted to terms and definitions, food analysis, and schemes of describing the energy and protein values of feeds, whilst Section II (85 pp.) deals with the nutrient requirements of animals and with feeding standards. Discussion of the nutritional qualities of common feeding-stuffs appears in the 96 pages of Section III, but the real heart of the book is doubtless the next Section (73 pp.) wherein are debated at length the formulation of rations, the design of basic, though flexible, rations for cattle and pigs, and the production of vitamin/mineral supplements. Lastly, three rather lengthy appendices contain (1) miscellaneous feeding guides for live-stock, (2) Canadian feeding-stuffs legislation and (3) miscellaneous charts and tables.

What are this new book's advantages? Firstly, good paper, clear type and a very neat lay-out have produced a volume which "handles well." Secondly, the author writes in a pleasantly discursive way, which was far commoner in Britain 25 years ago, before the two drying winds of rising book-production costs and mounting factual accumulation had led to the arid terseness of the typical modern text, unpleasant to writer and reader alike. Thirdly, he makes his points clearly, weights them with his long practical experience and, indeed reveals a clear individuality. Even though it has little or nothing to say of animal disease, this is a book which might be sampled profitably by many veterinary surgeons, for the caustic comment of the commercial feeding-stuffs supplier, concerning the liability of some veterinary surgeons to say "change the feed!" if all else seems to have failed, may not always be undeserved.

Though this book, in its appropriate field, can be well recommended, there is no doubt that a "free" style of writing can lead occasionally, as it does here, to slight repetition and hence to a higher price than necessary. That apart, its faults can be dealt with under the headings of "commission" and "omission," the former indicating to the author matters for correction in later editions and the latter clearly demonstrating to the potential buyer in what measure the contents of a book can be equated with its title.

Without looking at all closely for them, the reviewer found the following errors: regu*a*lr (p. 304), mino-calcium (Table 17-2) and Upps*o*la (p. 288), *D* -calcium (Table 17-3). In the List of Tables, Table 11-1 is given as appearing on p. 223, whereas it occurs on p. 224, whilst no list whatsoever is provided of the 28 Figures, many of them of much interest, which appear in the book. By American standards, the index is light: references to poultry, sheep, rapeseed meal and cottonseed meal, for example, will not be found therein, though included in the text.

This volume concentrates very largely on cattle and pigs, other species receiving somewhat cursory treatment. In a Canadian context, of course, this may be no great criticism. Furthermore, one feels that considerations of energy and protein needs are expanded to the detriment of those of other nutrients. Nevertheless, it remains an interesting book.

"Animal Diseases in South Africa." By M. W. HENNING, M.R.C.V.S., D.SC. Central New Agency Ltd., South Africa. 1956. Third edition (completely revised).

The new edition of Dr. Henning's well-known book will be welcomed not only by veterinarians in South Africa, but by English-speaking veterinarians all over the world. It is indeed a very good general text-book on infectious diseases of animals, and a large proportion of the diseases described therein are of interest and importance all over the world. The book is divided into three main sections—I. Bacterial Diseases, II. Protozoal Diseases, and III. Diseases Caused by Viruses and Rickettsias.

The new edition is much larger than the second edition, and Dr. Henning has taken considerable trouble to add new material and revise and re-write the older sections. Some diseases not dealt with in previous editions now appear, and these include ovine abortion, virus pneumonia of pigs, swine influenza, Rubarth's disease, leptospirosis, rift valley fever, and others.

The section relating to diseases of newborn animals has been much expanded, and provided with introductory paragraphs.

A feature of the book is the very extensive bibliography which appears at the end of each section; this was a feature of the second edition too, but the great increase in numbers of references illustrates the considerable advances which have been made since 1949. So far as any text-book can be, this book is up to date.

One of the additions is on dermatomycosis (lumpy wool), and it seems a pity that this has been included in a general chapter devoted to actinomycosis and actinobacillosis. It is a little difficult to disentangle the information on "lumpy wool" from that on the other two diseases, and it might have been better if the author had reviewed this disease in a separate section.

It is a pity that the publishers have not done justice to the book. They have used a poorer quality paper than they used in the second edition, and this has had the effect of making the whites muddy, and reducing the contrast of the many photographs which illustrate the text.

Apart from these, and other minor blemishes, this book is to be warmly recommended to anyone wanting a clear and well documented account of the infectious diseases of animals.

First Aid for Pets. By DR. LEON F. WHITNEY. Faber & Faber Ltd. 12s. 6d.

Dr. Whitney's book is, as it's name suggests, written for the layman and covers the routine first-aid items met with in the dog and cat, with further chapters on birds and fish.

The approach is realistic and the planning of the book, starting with a chapter on restraint and continuing on handling accidents etc., gives reasonably easy reference in emergency.

The author has extended his subject to cover such things as surgical after-care, parasite control, hygiene, and coat care which, while not strictly first-aid, can be dealt with usefully in a book of this type.

Such criticism as can be made arises firstly from the rather irritating constant reiteration of the word pet in reference to dogs and cats which occurs to the extent that after a few pages even the excellent advice to "take the pet to a vet." sounds a jarring note; and secondly from the inevitable misunderstandings that follow the publication of a book outside the country of its origin. Many items here relate only to the North American continent and often the nomenclature is not identical with ours.

In particular, in a chapter on how to recognise sickness, a table of distinguishing characteristics of the diseases of the distemper complex is given. In this all-embracing term the author includes not only what we know as the viruses of the distemper complex and contagious hepatitis, but also leptospirosis, streptococcic infection, tonsilitis, pneumonia, and coccidiosis, whereas over here we should generally reserve the term distemper for the Laidlow-Dunkin virus (called in this book Carré's disease) and for hard pad.

If the chapter is read fully it makes its point well, which is that it may not be easy, even for a professional, to make an exact diagnosis and that the word distemper is itself misleading, but even so the differences between British and American grouping and nomenclature may cause confusion to the layman.

One or two of the conditions described in the book are fortunately only of academic interest here, though the statement that tomato juice is the first-aid deodorant of choice when soaked into the skunk-sprayed dog has a piquancy of its own which lends added entertainment to a contingency, we may be deeply thankful to be spared; chlorophyl is not even mentioned. Can it be that its powers do not extend to skunk?

In the chapter on parasite control the descriptions and the life histories of the various parasites are given simply but adequately, but the earlier criticism still applies in that some of the treatments recommended might not be those readily available or most favoured over here.

The piperazine compounds might in any case be considered safer and more efficient in the treatment of roundworm infestations than the recommended tetrachlorethylene, though this remains the treatment of choice in hookworm infestation.

The inclusion of chapters on birds and fish is particularly to be commended as we have all too little authoritative information readily available for the layman.

A list of definitions and a fairly comprehensive index complete the book which is one that the veterinary surgeon may well wish to recommend to his clients with the reservation, only, that if he does, he will probably find himself involved in some explanation and translation.

News and Comment

THE PRESIDENT'S PRESS DINNER PARTY

It may be recalled that, during his Presidency last year, Mr. Wilkinson gave an informal dinner party to the proprietors and other principals of the agricultural press. This innovation proved so successful that it was decided to repeat it, and last Tuesday, Mr. Callender and his Officers entertained the agricultural correspondents of the national press, the Agricultural Liaison Officer of the B.B.C., and representatives of the farming journals to dinner at the Dorchester.

The dinner was, again, an informal one, and other guests were Dr. W. R. Wooldridge, Chairman of the Parliamentary and Public Relations Committee; Mr. E. Cotchin, Chairman of the Editorial Committee; the General Secretary of the B.V.A., and the Editor of this journal. In a brief speech, the President drew attention to the highlights of this year's Congress and announced that it would be preceded by a press conference in London to which he invited all those present that evening. On behalf of the guests, Mr. H. C. Hunt of the B.B.C. thanked the President for his hospitality.

By general consent the evening was a most happy and successful one, when valuable contacts were renewed and channels of communication with the press usefully widened.

ANIMAL BOARDING ESTABLISHMENTS BILL

This private members' Bill having passed its second reading by 45 votes to five, was sent to standing Committee C of the House of Commons, to which was specially added Mr. T. F. Peart, a member of the Council of the Royal College of Veterinary Surgeons.

When the Committee stage opened on Thursday, February 28th, the President (Professor L. P. Pugh), and the Registrar of the Royal College were present, but the proceedings could not commence for lack of the necessary quorum of 15 under Standing Orders. There were about 14 members present, and after waiting for 20 minutes, as required by Standing Orders, the Chairman directed that the Committee stand adjourned until Thursday, March 7th, when, if there is again no quorum, it is probable that the Bill will go to the bottom of the list of private members' Bills and is unlikely to make any further progress this Parliamentary Session.

It is an interesting point of Parliamentary tactics that some members of the Committee opposed to the Bill, when it was observed that a quorum was unlikely to be obtained without their presence, remained outside the Committee Room during the 20-minute period.

If the Bill does proceed, it is satisfactory to know that effect is being given to the principle established by the successful opposition of the Royal College of Veterinary Surgeons to the Huddersfield Corporation Bill.

Mr. Ridsdale, the presenter of the Bill, in accordance with his statement on the second reading regarding the attitude of the Royal College, has put down an amendment to his own Bill which would remove entirely from the scope of the Bill any premises used professionally by a Veterinary Surgeon or Practitioner. It will be remembered that the Bill, as originally drafted, would have only exempted such premises when used to accommodate animals whilst undergoing treatment.

Another important amendment is down in the name of the Joint Under-Secretary of State for the Home Department (Mr. J. E. S. Simon), to whose Department the Royal College had made direct representations on the Bill. The effect of this amendment would be to strike out the following definition of the word " officer " as used in the Bill:—

> " ' Officer ' includes any person appearing to a local authority to be specially qualified by his character and experience to carry out the functions assigned."

If this amendment is accepted, then inspections could only be carried out by an officer of a local authority or an appointed Veterinary Surgeon or Practitioner, following the principle of the Huddersfield Corporation Bill.

There are further amendments in this connexion moved by Mr. R. Dudley Williams and Mr. Doughty, who are directly opposed to the Bill, and acted as tellers against it on the second reading division. These amendments would limit local authorities to using Veterinary Surgeons or Practitioners as Inspectors.

As we go to press, we have heard that on Thursday, March 7th, there was a quorum and the Committee stage is proceeding.

EXHIBITION OF PAINTINGS AND DRAWINGS BY GEORGE STUBBS

Any lover of fine horses and of fine paintings who can make his way to the Whitechapel Art Gallery (next to Aldgate East Station) by April 7th will have an opportunity—which may never recur—of seeing an exhibition of some really magnificent paintings and drawings by George Stubbs (1724-1806), already of high repute in the veterinary world for his " Anatomy of the Horse." Amongst the paintings that may be singled out for special mention are: No. 8 (John and Sophia Musters on Horseback), No. 12 (Self Portrait), the superb No. 18 (Gimcrack with a groom, jockey, and stable-lad on Newmarket Heath), No. 30 (Mares and foals), Nos. 44 to 47 (Reapers and Haymakers), No. 48 (A cheetah with two Indians), and, perhaps the finest picture in a very fine exhibition, No. 29 (Hambletonian, Rubbing Down).

This exhibition, which includes works lent by private collectors, museums, galleries, and institutions, contains pictures that have not previously been seen in London, and shows without any doubt that Stubbs is not just a great painter of horses, but a very great artist indeed.

AREA ERADICATION PLAN FOR TB

The Minister of Agriculture has announced his intention to provide free tuberculin tests of cattle as from March 1st in the following areas which it is intended to declare as Tuberculosis Eradication Areas in two years' time:—

Cornwall and West Devon. (East Devon has been a free-testing area since March, 1956.)

Flint, Shropshire, Herefordshire, Monmouthshire, Worcestershire (excluding Dudley), Gloucestershire, Bedfordshire, Hertfordshire, Middlesex, London, Essex, Cambridgeshire (excluding the Isle of Ely), West Suffolk, East Suffolk, Norfolk; the remainder of Denbighshire, Glamorgan, Oxfordshire, and Buckinghamshire (part of these counties have already been designated as Tuberculosis Eradication or Attested Areas); a part of Northamptonshire and of Warwickshire.

Part of the West Riding of Yorkshire. Part of Durham, and the North Riding of Yorkshire.

ANNUAL LUNCHEON OF THE PARLIAMENTARY AND SCIENTIFIC COMMITTEE

A large and very distinguished company of scientists, parliamentarians, representatives of public bodies and their guests sat down to luncheon at the Savoy Hotel, London, on February 27th, having previously been received by Lord Waverley.

The guest of honour was Sir Cyril Hinshelwood, President of the Royal Society, who in responding to the toast of The Guests, spoke of the high position that the scientist ought to occupy in a modern community, and the importance of young scientists feeling able to aspire to the nation's " first eleven." He hinted that continuing frustration at home could lead to the loss of irreplaceable men whom other nations would welcome.

Among those who had accepted invitations were: the Minister of Agriculture; Mr. E. R. Callender, President of the B.V.A.; Professor L. P. Pugh, President of the R.C.V.S.; Sir William Slater; Dr. W. R. Wooldridge; Professor Weipers; Dr. F. R. Bell; Mr. S. F. J. Hodgman; Mr. D. F. Oliver, Hon. Secretary of the B.V.A.; Mr. W. G. R. Oates, Registrar of the Royal College; Mr. Kenneth Bird (" Fougasse," the artist), Chairman of UFAW; Mrs. Bird, and Major C. W. Hume, Director of UFAW.

"CHESHIRE EWE HAS QUINTUPLETS"

We have received a letter from Mr. Kenneth J. Mackay, of Llanelly, to the following effect:—

" With regard to the paragraph ' Cheshire Ewe has Quintuplets,' which appeared recently in THE VETERINARY RECORD, I enclose a photograph of a ewe and her six live lambs. I attended the ewe last year and delivered the six lambs, the ewe being afterwards given an I.V. of ' Intradex ' and cow's milk laced with whisky *per os*, as she was suffering from severe shock."

HONORARY DOCTORATE CONFERRED

At a special convocation on Friday, March 1st, an honorary degree of Doctor of Science was conferred upon Mr. R. E. Glover, Principal and Dean of the Royal Veterinary College, Camden Town. A dinner was held in the evening to mark the occasion, and Professor L. P. Pugh, President of the Royal College of Veterinary Surgeons, was among the guests.

+ See Correction p. 352

MR. CHARLES HUNTING

Mr. P. D. I. Thomas writes:—

It is with profound sorrow that I write this appreciation of a man whose career was abruptly terminated by a most unfortunate injury inflicted by a cow's horn. Charles Samuel Hunting, F.R.C.V.S., was a native of Co. Durham, the son of Charles Samuel Hunting, M.R.C.V.S., who practised at South Hetton. After qualifying, he assisted in practice at Eastwood, Notts., and then at York. In 1913 he started in practice on his own account at Loughborough. During his 44 years in this town he built up a reputation as a result of hard work and "constancy to purpose"—a principle which he observed at all times.

As a horse practitioner, his knowledge was profound indeed, the result of years of clinical study and appreciation of detail. His was a valued opinion in light horse work.

As one of the older practitioners, he was amazingly abreast of modern methods and principles, which he applied together with a measure of the old and well-tried treatments.

His death came as a very great shock to all who knew him, especially as he was still a very active practitioner.

This must certainly be a sad loss to the profession, the agricultural and hunting community, and the small-animal lovers of his district. All will mourn the loss of a competent and conscientious man, and many will miss a very good friend.

Deepest sympathy is extended to Mrs. Hunting in the tragic loss of her devoted husband.

PERSONAL

Births

ROSE.—On February 22nd, 1957, to Margaret, wife of W. K. Rose, M.R.C.V.S., of Adelaide, South Australia, a son.

SLADDEN.—On February 23rd, 1957, at Raigmare Hospital, Inverness, to Maureen, wife of Ian E. T. Sladden, M.R.C.V.S., of Portree, Isle of Skye, a daughter, a sister for Timothy and Mary Laura.

Marriage

WILKINS—HYATT.—At Killean Kirk, Killean, Stirlingshire, on March 2nd, 1957, Geoffrey T. Wilkins, M.R.C.V.S., of Crewkerne, Somerset, to J. Margaret Hyatt, M.R.C.V.S., of Dumgoyne, Stirlingshire.

Mr. J. B. Brooksby, of the Research Institute (Animal Virus Diseases), Pirbright, Surrey, has recently been awarded the Degree of D.Sc. for his work on animal virology.

Mr. E. G. Wake has been appointed Secretary to the National Pig Breeders' Association. He will take up his duties in the near future.

COMING EVENTS

March

13th (Wed.). Meeting of the Southern Counties Veterinary Society at the Polygon Hotel, Southampton, 7.30 p.m.

14th (Thurs.). Meeting of the South-East Midlands Veterinary Medical Association at Franklin's Gardens Hotel, Northampton, 7.30 p.m.

20th (Wed.). Meeting of the Section of Comparative Medicine, Royal Society of Medicine, at the Society's house, 5 p.m.

Ordinary General Meeting of the Sussex Veterinary Society in the Old Ship Hotel, Brighton, 2.30 p.m.

21st (Thurs.). Annual General Meeting of the East Midlands Division at the Nottingham School of Agriculture, Sutton Bonington, 2.15 p.m.

29th (Fri.). Annual Dinner-Dance of the East Midlands Division at the George Hotel, Nottingham, 7 p.m.

28th (Thurs.). Meeting of the British Veterinary Poultry Association at the Royal Veterinary College, Camden Town, N.W.1, 11 a.m.

73rd Annual General Meeting of the Western Counties Veterinary Association at the Rougemont Hotel, Exeter, 2.35 p.m.

30th (Sat.). Annual Convention of the Ceylon Veterinary Association in the Queen's Hotel, Kandy, Ceylon.

April

3rd (Wed.). Meeting of the Southern Counties Veterinary Society at the Grand Hotel, Bournemouth, 7.30 p.m.

6th (Sat.). Annual Dinner of the B.R.X. Club at the Royal Veterinary College, Camden Town, N.W.1, 6 p.m.

10th (Wed.). Ordinary Meeting of the Ayrshire Veterinary Association in the Station Hotel, Ayr, 2.30 p.m.

20th (Sat.). Annual Dinner of the R.V.C. '52 Club at Ye Miller of Mansfield, Goring.

Meeting of the Scottish Group of the Nutrition Society in Aberdeen for a Symposium on Clean Food.

May

24th (Fri.). 165th Annual Ball of the Royal Veterinary College Students' Union Society at the Royal Veterinary College, Camden Town, N.W.1, 9 p.m.

BRITISH VETERINARY ASSOCIATION QUARTERLY MEETINGS IN EDINBURGH

Wednesday, April 10th—Royal (Dick) School of Veterinary Studies

10.15 a.m. Small-Animals Committee.
2.15 p.m. Home Appointments Committee.
4.00 p.m. Farm Live-stock Committee.

Thursday, April 11th—Royal (Dick) School of Veterinary Studies

10.00 a.m. Veterinary State Medicine Committee.
11.30 p.m. Parliamentary and Public Relations Committee.
2.15 p.m. General Purposes and Finance Committee.

Friday, April 12th—Royal (Dick) School of Veterinary Studies

10.15 a.m. Council Meeting.

FOOT-AND-MOUTH DISEASE

The area described in the schedule below is declared to be an Infected Area for the purpose of preventing the spread of foot-and-mouth disease:—

The City and County Borough of Plymouth.

IN THE COUNTY OF DEVON

The Petty Sessional Divisions of Tavistock and Plympton.

In the Petty Sessional Division of Totnes: The parish of South Brent.

In the Petty Sessional Division of Teignbridge: The parishes of Dean Prior, West Buckfastleigh, Holne, Buckland in the Moor and Widecombe in the Moor.

In the Petty Sessional Division of Hatherleigh: The parishes of Gidleigh, Throwleigh, Belstone and Bridestowe and Sourton Common and so much of the parishes of South Tawton, Okehampton Hamlets and Sourton as lies to the south and east of the main road (A.30) running from Exeter *via* Okehampton to Bridestowe excluding the said road.

IN THE COUNTY OF CORNWALL

The Borough of Saltash.

In the Petty Sessional Division of South East: The parishes of Maker with Rame, Millbrook, St. John, Torpoint, Antony, Sheviock, Landrake with St. Erney, Botus Fleming and Landulph.

In the Petty Sessional Division of Middle East: The parishes of Pillaton, St. Mellion, St. Dominick, Callington and Calstock.

Temporary Provision in Regard to the Straying of Animals on Dartmoor

(1) The provisions contained in Article 8 of the Foot-and-Mouth Disease (Infected Areas Restrictions) Order of 1938, prohibiting the straying of animals upon any road or other highway in an Infected Area, shall not apply to any road or highway passing over the part of Dartmoor situate within the Infected Area declared by this Order, hereinafter referred to as the "said Moor," nor to animals grazing on the said Moor.

(2) No cattle, sheep, goats, or swine shall be moved on to the said Moor from any place not being situate on the said Moor.

(3) Cattle, sheep, goats, or swine being moved with a licence under the Foot-and-Mouth Disease (Infected Areas Restrictions) Order of 1938 shall not be moved along or across any road or highway passing over the said Moor except by lorry or other vehicle.

(4) The unloading of any cattle, sheep, goats, or swine from any lorry or other vehicle on the said Moor or on any road or highway passing over the said Moor is prohibited.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak

Anthrax

Ayr. Fortacres Farm, Dundonald, Kilmarnock (Mar. 1).

Bucks. Lower Pollicot Farm, Ashendon, Aylesbury (Feb. 25).

Dunbarton. Palacerigg, Cumbernauld Station, Glas. (Feb. 26).

Northants. Manor Farm, Denford, Kettering; Waterworks Farm, Wellingborough (Feb. 23); Poplars Farm, Rothersthorpe (Feb. 25); The Meadow, Oundle Road, Thrapston, Kettering (Mar. 1).

Notts. Church Farm, Lowdham (Mar. 1).

Salop. Lower House, Criggion, Ford, Shrewsbury (Feb. 26).

Sussex. Crays Farm, Thakeham, Pulborough (Feb. 25); Town House Farm, Thakeham, Pulborough (Feb. 22).

Yorks. Laund House Farm, Moor Monkton, York (Feb. 22).

Foot-and-Mouth Disease

Devon. Belliver Farm, Roborough, Plymouth (Mar. 3).

Fowl Pest

Essex. Bridge Farm, Willingale, Ongar (Feb. 22).

Kent. Oakdene, Bekesbourne, Canterbury (Feb. 27); The Rosary, Bekesbourne, Canterbury (Mar. 1); Belmont, Bekesbourne, Canterbury (Mar. 2).

Lancs. Odd House Farm, Little Hoole, Preston (Feb. 25); Denham Spring Farm, Brindle, Chorley; Highfield Farm, Levenshulme, Manchester; Lower Copthurst Farm, Whittle-le-Wood, Chorley (Feb. 26); Moss House Lane, Much Hoole, Preston (Feb. 27); Round Barn Farm, Mawdesley, Ormskirk; Brooklyn, Gill Lane, Longton, Preston; Pine Avenue, Little Hoole, Preston; Ivy Farm, Thistleton, Preston (Feb. 28); Mill Cottage, Moss House Lane, Much Hoole, Preston; Willowbridge Farm, Catforth, Preston; Toppings Farm, Tarleton, Preston; Mago Farm, Tarleton, Preston (Mar. 1); Primrose Cottage, Station Road, Little Hoole, Preston; Lane End Farm, Station Road, Little Hoole, Preston (Mar. 2); Carver Hey Farm, Moss Lane, Little Hoole, Preston; Wyre View, St. Michaels-on-Wyre, Preston; Leal Cottage, Dob Lane, Little Hoole, Preston; Rosedene, Moss Lane, Preston (Mar. 3).

Yorks. Springwell Piggery, Churwell, Leeds (Feb. 23).

Swine Fever

Aberdeen. The Piggery, Blackhillie, Udny Station, Aberdeen (Feb. 25).

Berks. East Park Farm, Twyford, Reading (Feb. 22); Kidmore End Farm, Kidmore End, Reading (Feb. 26).

Cambs. 1, Hinton Road, Fulbourn (Feb. 22).

Devon. Lewis Hill Piggeries, Northam, Bideford (Feb. 25).

Flints. Greenvale, Level Road, Wood Lane, Hawarden (Mar. 1).

Kent. Mill Place Farm, Yalding, Maidstone (Feb. 26); Hillside Farm, Harrietsham, Maidstone (Feb. 28).

Leics. Fields Farm, Worthington, Ashby de la Zouch (Feb. 28).

Middx. Stockley Farm Piggeries, Chapel Lane, West Drayton (Feb. 25).

Norfolk. White House Farm, Rollesby, Great Yarmouth (Feb. 27).

Northants. The Piggeries, Stoke Road, Blisworth (Feb. 28).

Oxford. Duckpool Farm, Great Rollright, Chipping Norton (Feb. 26); Hailcomb Farm, South Hewington, Banbury (Feb. 28).

Somerset. Ubley Park Farm, Ubley, Chewstoke, Bristol (Feb. 25).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

Export of Live Cattle to the Continent

Sir,—Since March, 1956, more than 12,000 live cattle have been exported from Dundee, all of which have been examined by me personally both before and during loading. I can state, with the utmost confidence, that every animal has been in a fit condition to undertake a journey by sea. A very small proportion of the animals arriving for export were found, on examination, to be suffering from injuries, but on no occasion has such an animal been shipped.

At all times, since this export trade started, there has been adequate provision of shelter, bedding, water, and food for animals awaiting embarkation, these facilities being arranged in the best interest of the animals.

The allegations of ill-treatment of animals during shipment could only be proved or disproved by taking passage in one of the ships, but I must state that all ships leaving this port, carrying cattle, are provided with more than adequate supplies of bedding, water, and feeding. There is a good, efficient system of ventilation to all decks, and the animals, while not provided with individual stalls, are penned in small numbers and tethered.

I would be only too pleased to show anyone interested the procedure and actual conditions under which this export trade is being conducted here.

Yours faithfully,

A. SPREULL,
Superintendent.

Public Slaughter-houses and Markets,
60, East Dock Street,
Dundee.

February 25th, 1957.

Content of "The Veterinary Record"

Sir,—The recent letters on this subject lead me to suggest that research and other papers printed in THE RECORD could be made more immediately interesting to the uninformed if the summary was printed at the head of the article rather than at it's end. It is placed in this position in the journals of several other sciences.

I feel that such a juxtaposition of title and results would be much more informative and eye-catching for the average veterinarian. The turning over of pages and pages of print and graphs often disheartens me at least from bothering to find the results and read them; anyway, there is always something more interesting shouting for attention from the next page.

Yours faithfully,

W. J. HERBERT.

c/o Royal (Dick) School of Veterinary Studies,
Edinburgh, 9.

March 3rd, 1957.

Gut Oedema of Baby Pigs

Sir,—An outbreak of gut oedema among pigs used for nutritional experiments has enabled us to study this condition. This occurred in the experimental herd at 7 to 12 weeks of age in normally reared piglets, and at three to four weeks in early weaned piglets. The symptoms and *post-mortem* appearances agreed with those already published, *i.e.* oedema in the coils of the colon, gelatinous deposits in the stomach wall, oedema of the eyelids, and staggering gait. Most of the pigs died within six hours and the remainder showed nervous symptoms for three to four weeks when most of them died.

Cultures were isolated from 17 pigs which died or were sacrificed. Of the many types of bacteria isolated, our attention was drawn to β-haemolytic *Bact. coli*; these were the only ones which always occurred in the gut and sometimes in other organs (liver, spleen) of pigs at various stages of the disease. Moreover they were the only ones which proved to be pathogenic for mice.

The pathogenicity of five of the β-haemolytic *Bact. coli* strains was tested in 10 early weaned pigs 10 to 17 days old (two pigs per strain). Intraperitoneal injection of 10 ml. of culture killed seven pigs within the observation period of eight days. Only one pig died in a corresponding group of eight which were injected with heart infusion broth. There can be little doubt, therefore, that certain strains of *Bact. coli* isolated from pigs with gut oedema are pathogenic and are probably the main cause of the disease. Under experimental conditions, however, the sensitivity of the pigs depended on their age, because even 40 ml. of culture fluid failed to kill animals 23 to 25 days old.

A commercially available polyvalent *Bact. coli* antiserum* effectively protected mice when it was administered before injection of the haemolytic *Bact. coli* cultures. The effectiveness of this preparation in protecting early weaned pigs of the experimental herd appears to depend on the age of the animals. Intraperitoneal injection at 12 days of age of 1, 5, or 10 ml. of antiserum provided no protection and 15 out of 45 pigs treated this way died (33 per cent. mortality). The death rate in the untreated control group of 88 pigs was 35 per cent. However, treatment with the antiserum was effective if a first injection of 0.1 ml. was given at 18 days, when the initial symptoms of oedema are seen in early weaned pigs, followed by further injections of 1 and 5 ml. at 20 and 22 days respectively. Of the 133 pigs treated in this way only 12 died (9 per cent. mortality).

It is important that the first injection should coincide with the appearance of the first symptoms and should be restricted to 0.1 ml. At this stage of the disease the pigs are hypersensitive to *Bact. coli* antibody and severe reactions resembling those of anaphylactic shock occur if the first dose is exceeded. The first injection thus serves to desensitise the animals.

We have not yet had the opportunity of testing this treatment in affected animals under other management conditions, especially pigs suckled for

* "Aggrecolin," Bayer Products Ltd., London.

the normal eight-week period, but as one of us is engaged in practice the treatment was extended to four unrelated outbreaks on different farms.

In the first herd, after deaths had occurred in the previous 24 hours, six apparently healthy pigs normally reared and 10 weeks old were treated and remained healthy. In the second herd six early weaned pigs were treated at four weeks of age, after previous history of deaths and only one further pig was lost. In the third outbreak nine 14-week-old pigs were treated. At this time the pigs showed symptoms of oedema and there was a history of deaths. All the treated pigs survived. In the fourth herd five severely affected 12-week-old pigs were treated and two survived.

Further work at the experimental centre on a group of 41 pigs showed that the anaphylactic-like shock, noted above, was specifically due to *Bact. coli* antibodies. In 1935, Kellett, working with guinea-pigs, has observed a similar reaction to antibody and termed it "reversed passive anaphylaxis." The significance of this reaction and detailed properties of the coliform cultures isolated is being studied. Further details of this work will be published elsewhere.

Yours faithfully,

RUTH M. LEMCKE.
D. B. BELLIS,
A. HIRSCH,

Unilever Ltd.,
Food Research Department,
Colworth House,
Sharnbrook,
Bedford.

J. B. EDWARDS.

1, London Road,
Wellingborough,
Northants.

February 19th, 1957.

Broadcasts by the Midland Radio Veterinary Surgeon

Sir,—Your correspondent Mr. E. E. Herrod-Taylor would do well to consider carefully the following facts:—

1. All my statements on obstetrics were qualified by the only qualification that really counts—the hard, bitter experience of nearly 17 years of intensive agricultural practice.

2. At no time did I mention "water bladders." After all, broadcasting time is limited to 5 minutes. However, all the facts stated were absolutely true and were used to impress upon the farmer the safety of allowing the animal plenty of time.

3. I have found my recommended procedure where the calf's head is impacted just inside the vulva, by far the best method. Indeed, many of the cases of acute impaction in heifers to which we are called in this practice have been caused by farmers pulling on the legs in such presentations.

4. In my opinion the popular term "vet" is used by the lay public because they find difficulty in pronouncing "veterinary surgeon."

Yours faithfully,

THE MIDLAND RADIO
VETERINARY SURGEON.

The Midlands.

March 2nd, 1957.

Broadcasts by the "Radio Vet"

Sir,—Having been associated with 30 to 40 broadcasts on the Home Service of the B.B.C., and this fact being reasonably well known to my colleagues in practice, I would be grateful if I could make it clear that I was in no way associated with the broadcast referred to in THE VETERINARY RECORD of last week.

Yours faithfully,

11, Widford Road,
Stock,
Essex.

ROGER MASSEY.

March 5th, 1957.

Sir,—As from 1943 for several years I broadcast talks to farmers under the title of the "Radio Vet.," allow me to repudiate the authorship of the talks alluded to by Mr. Herrod-Taylor in your issue of March 2nd.

Yours faithfully,

R. C. G. HANCOCK.

Meadham Cottage,
Hannington,
Basingstoke,
Hants.

March 2nd, 1957.

ADVERTISER'S ANNOUNCEMENT

WILLOWS FRANCIS LTD. announce that Mr. J. R. Davis and Mr. A. Robert Bridges have been appointed Directors. Mr. J. R. Davis is Secretary of the Company.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-Mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th February, 1957		19	2	1	37	—	39
Corresponding period in	1956	171	1	—	15	—	20
	1955	58	—	—	26	—	57
	1954	14	—	1	50	—	41
1st January to 15th February, 1957 ...		51	2	11	162	—	109
Corresponding period in	1956	288	1	—	112	—	78
	1955	151	—	5	111	—	140
	1954	36	—	3	236	—	170